Comp 388/441 - Human-Computer Interface Design

Week 10 - 19th March 2015

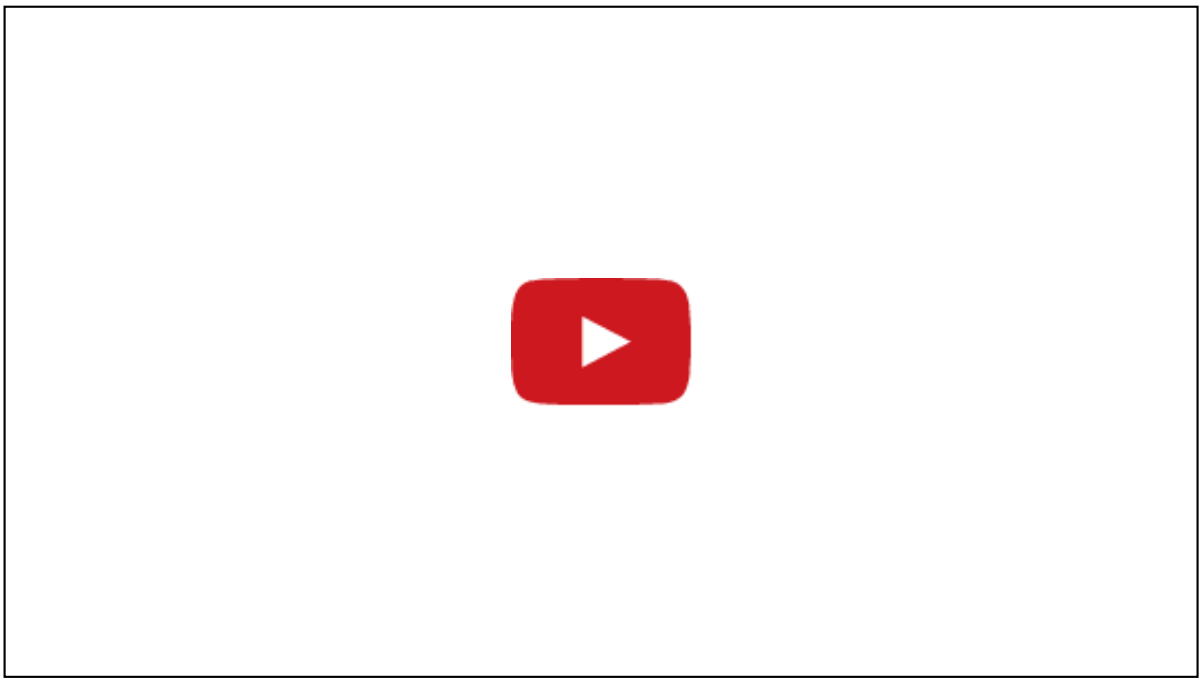
Dr Nick Hayward

Users and skills - 11

Gaining competence

- practice allows us to determine improvement relative to a given activity
- **four stages of competence** model suggested by Robinson in 1974
- this model suggests the following stages a user may follow to mastering a skill
    - ***unconscious incompetence***
        - user is unaware of how bad he or she may be relative to a particular skill
        - may even by unaware that the skill exists
    - ***conscious incompetence***
        - as user attempts a given skill, they become increasingly aware of a deficiency of skills
        - realise need to improve that skill through further training, learning, practice...
        - may be a daunting and overwhelming realisation for many users
    - ***conscious competence***
        - practice allows a user to engage in training sessions, exercises...
        - effectiveness of such training can vary greatly
        - often dependent upon task itself, suitability of chosen practice and training
- games are a good example of hands-on training and practice

Users and skills - video



Nintendo Brain Age: Concentration Training - Source: YouTube

Principles for usability - I

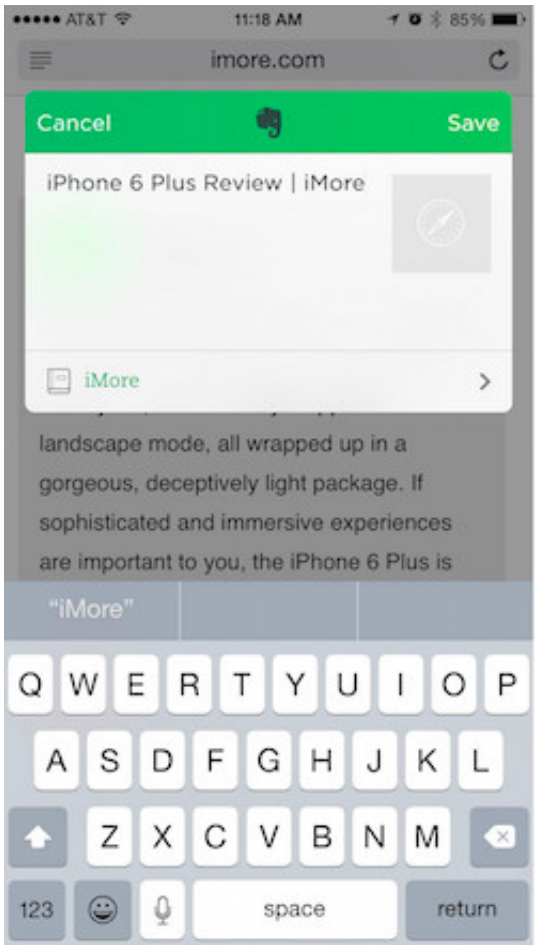
- consider some of the underlying design principles that help guide our designs
- eg: Don Norman's design principles for usability
    - *Norman, D. The Design of Everyday Things. 1988.*
- Norman introduced a set of basic design principles and concepts
    - *consistency*
    - *visibility*
    - *affordance*
    - *mapping*
    - *feedback*
    - *constraints*

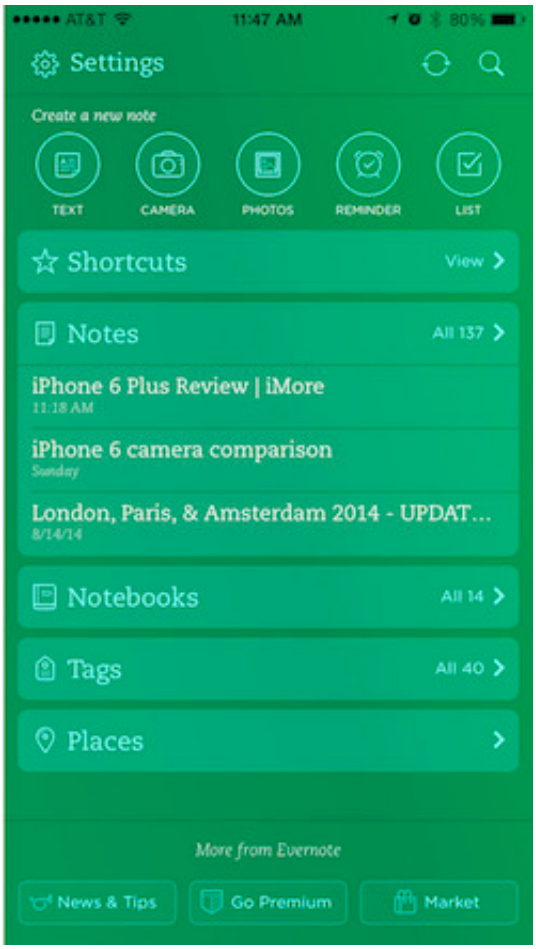
Principles for usability - 2

Consistency

- one of the primary ways our users learn is by discovering *patterns*
    - *new situations easier to learn by reference to existing patterns of knowledge*
- *Consistency* is key in helping our users recognise and apply such patterns
- overall, things that look the same should perform the same general way
    - *same button, same colour normally infers same pattern of interaction and usage*
- behaviour and actions should also follow a similar pattern
    - *sound, animation, vibration etc should follow a similar patterm for users*
- design inconsistency can cause confusion and overload for our users
- memorisation of exceptions may also increase user resentment towards the app
- internal design and interaction consistency crucial for our users
- external consistency equally important and useful
    - *consistency between OS and app design guidelines*

Principles for usability - Evernote for iOS 8





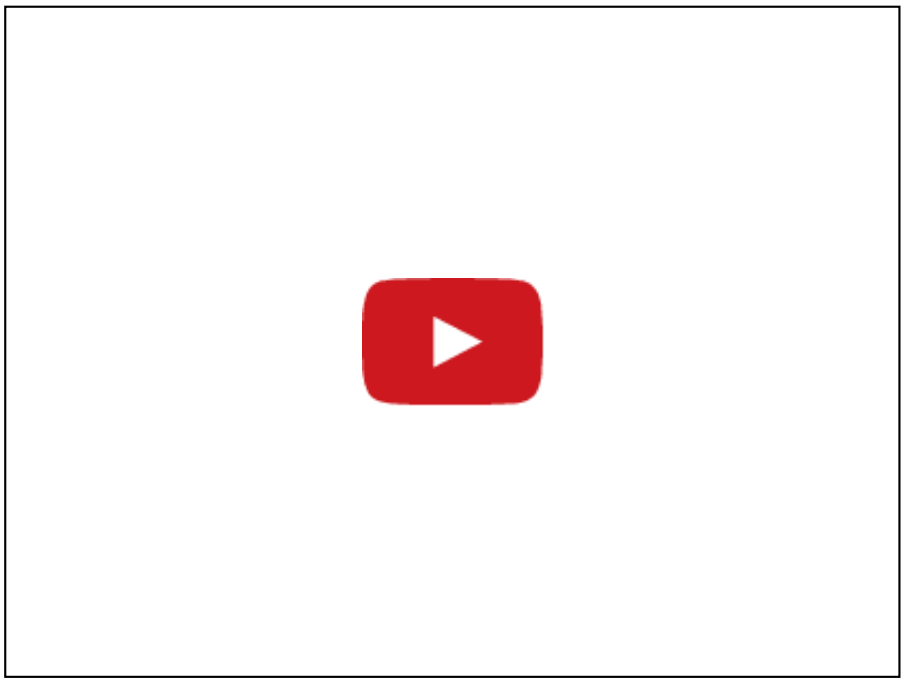
Source - Evernote

Principles for usability - 3

Visibility

- users normally learn app functionality by visually inspecting the UI
    - *eg: available menus, menu items, icons, buttons, links, tools etc...*
- sequential tasks should be well labelled and navigation obvious
    - ***next*** *button obvious, and highlighted*
- usability and learnability naturally improved when options and commands clear and visible
    - *controls should be easily visible, contextually appropriate, logically placed*
- functionality within an application that is not visually represented often hard to discover
    - *keyboard shortcuts often a bad choice for sole command option*
    - *shortcut combinations often noted in visual menus*
- visibility does not, necessarily, infer that all options and functions be graphically represented
- impractical for many complex applications
    - *need for careful, considered design choices and contextual awareness*

Principles for usability - video



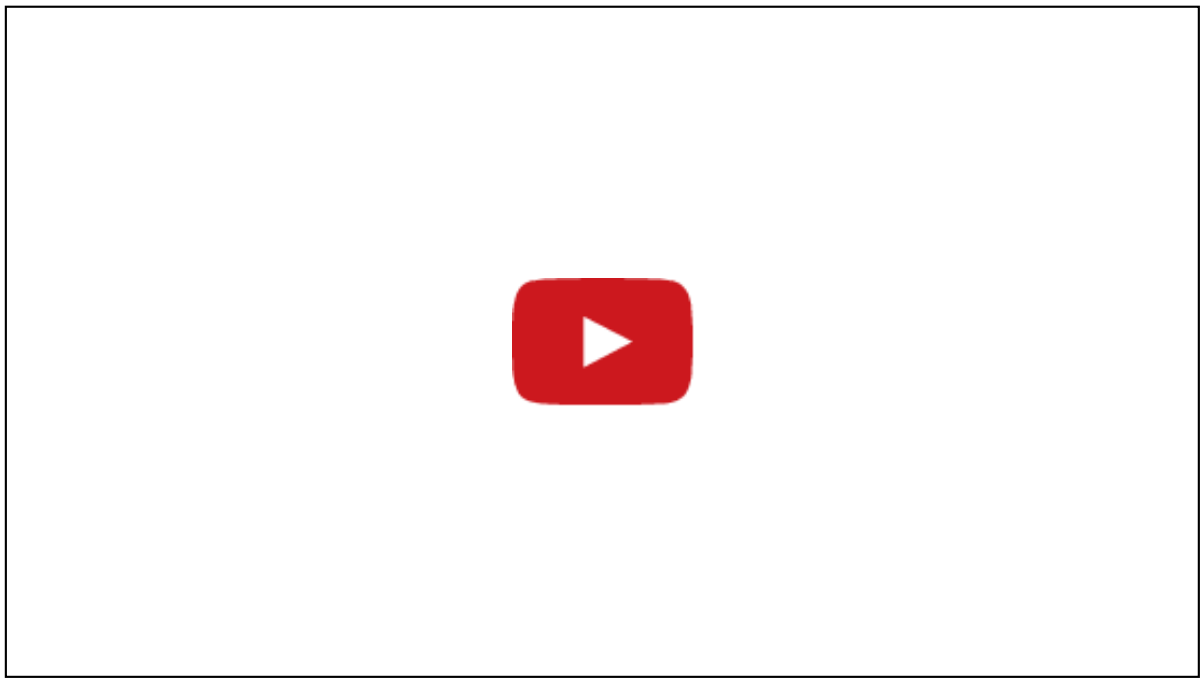
Photoshop: Selecting from a contextual menu - Source: YouTube

Principles for usability - 4

Affordance

- a visual attribute or physical property of a given object or control
- gives the user clues to the operation or functionality of an object or control
- system parts manipulated to allow a user to interact with the given system
    - *eg: a door handle*
    - *shape of door handles, the nature of the door itself present clues to functionality*
- visual clues can be used to show UI element functionality
- eg: make controls, buttons etc appear clickable and ready for interaction
- add some highlight to show a user that a submit button is ready for a completed form
- design conventions developed for a reason
    - *offer a useful reminder of how patterns can easily be developed relative to a UI*
    - *blue underline for links on a web page*

Principles for usability - video



Material design - Source: YouTube

Principles for usability - 5

Mapping

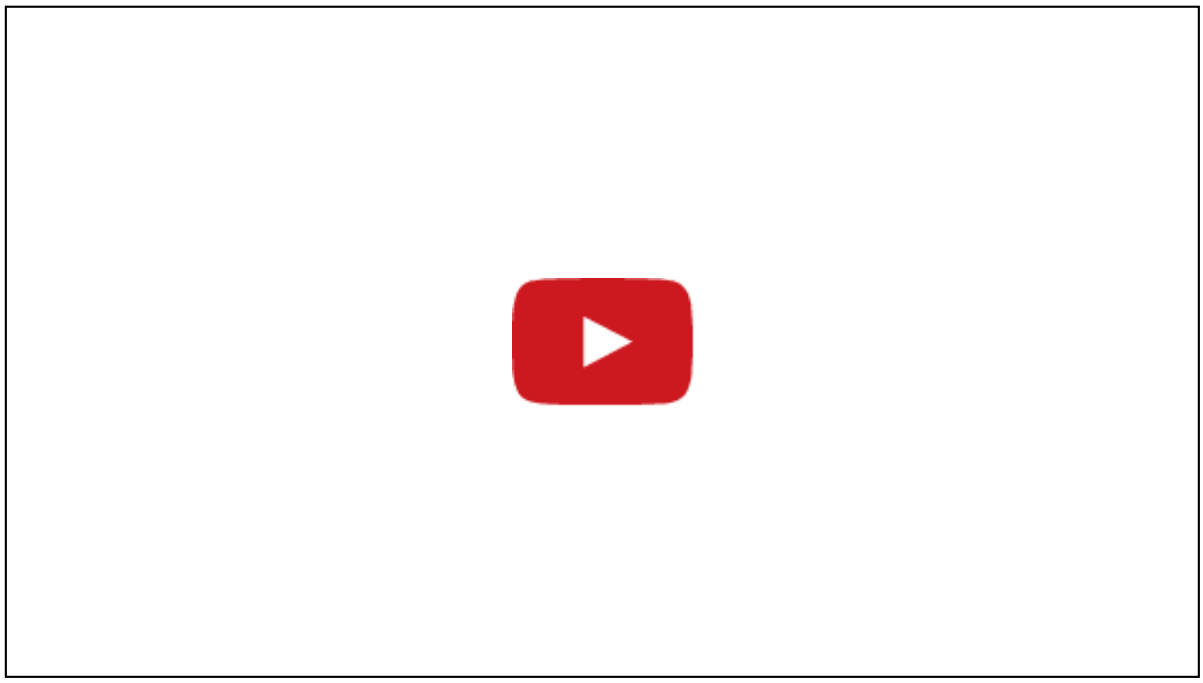
- expected relationship between a performed action and the expected result
    - *mapping between a given control and its behavioural effect*
- such mappings should be logical, explicit, and straightforward
    - *descriptive labels, icons etc on buttons, menus...*
- controls should be positioned in a logical manner
    - *adhering to conventions where possible*
    - *many UI guidelines, real-world examples to help guide our design choices*
- modifications of expected conventions will cause unnecessary issues for users
    - *where necessary, reinforce with training and help...*

Principle for usability - 6

Feedback

- plays a crucial role in reinforcing users' perception, expectations, general experience...
- principle of feedback states that designers should offer users confirmation or acknowledgement for the result of an action
    - *good or bad, successful or unsuccessful*
- distinguish two types of feedback
    - ***activational feedback***
        - provides evidence that a given control was actioned successfully.
        - eg: a button pressed, menu item selected, slider control moved to a new position
        - feedback may be offered visually, in a tactile manner for physical controls, an audible alert
    - ***behavioural feedback***
        - provides evidence an action etc has had an effect of the application, system...
        - eg: app closes an open, active window, shows a dialog window and status message, audible sound...

Principles for usability - video



Material design - Source: YouTube

References

- Robinson, W.L. *Conscious competency - the mark of a competent instructor.* Personnel Journal, 53. PP. 538-9. 1974.