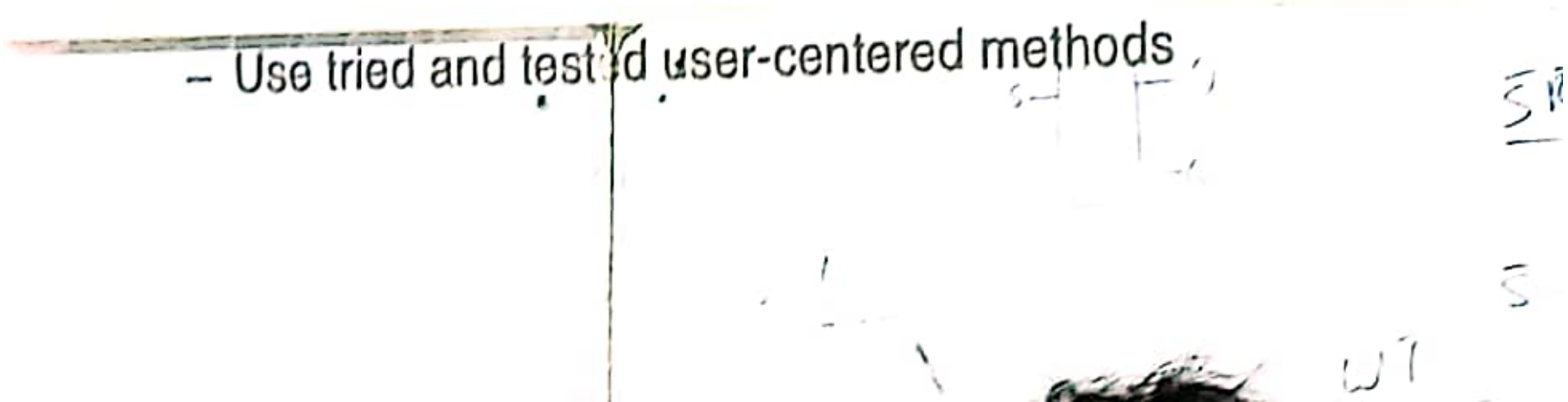
Understanding users' needs

- Need to take into account what people are good and bad at
- Consider what might help people in the way they currently do things
- Think through what might provide quality user experiences
- Listen to what people want and get them involved
- Use tried and tested user-centered methods

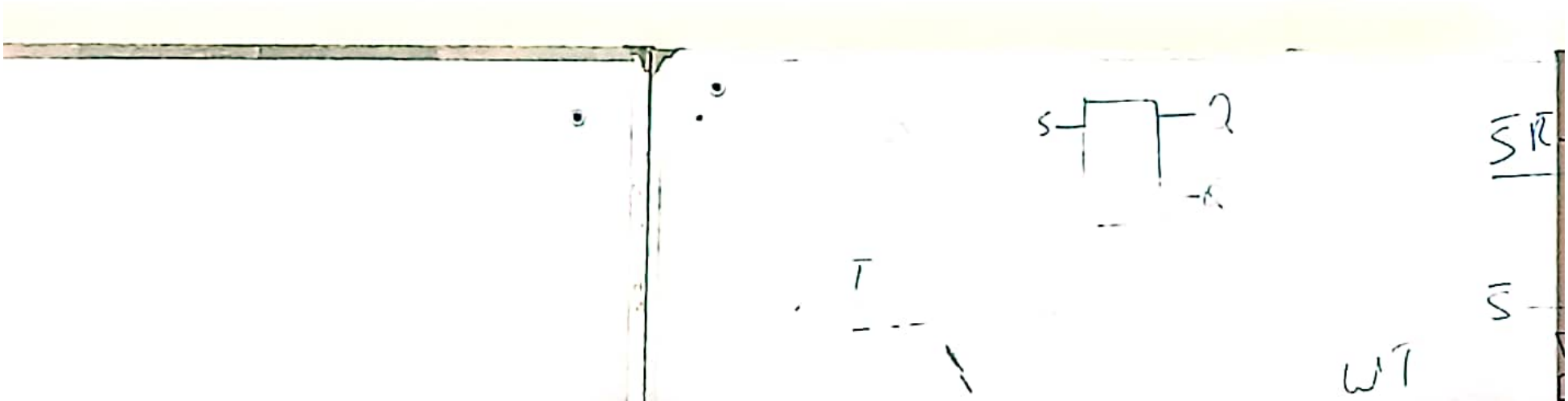


What is involved in the process of interaction design

- Identifying needs and establishing requirements for the user experience
- Developing alternative designs to meet these
- Building interactive prototypes that can be communicated and assessed
- Evaluating what is being built throughout the process and the user experience it offers

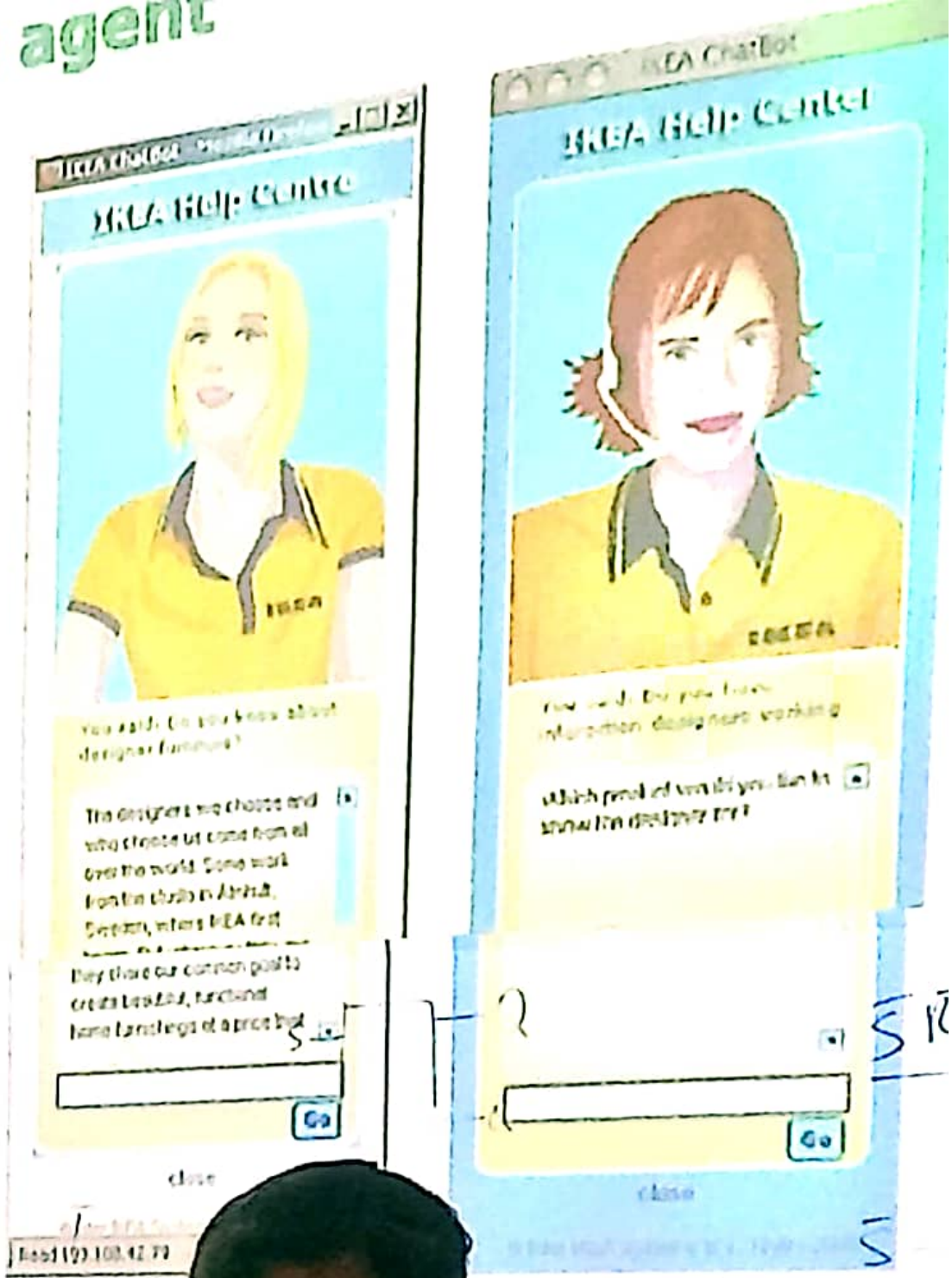
Goals of interaction design

- Develop usable products
  - Usability means easy to learn, effective to use and provide an enjoyable experience
- Involve users in the design process



Anna, IKEA online sales agent

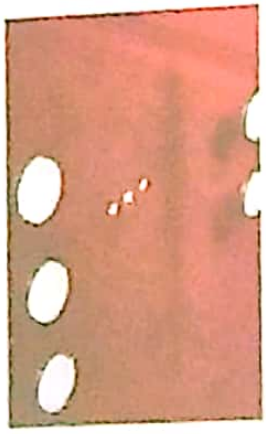
- Designed to be different for UK and US customers
- What are the differences and which is which?
- What should Anna's appearance be like for other countries like India, South Africa or China?



Core characteristics of interaction design

- Users should be involved through the development of the project
- Specific usability and user experience goals need to be identified, clearly documented and agreed at the beginning of the project
- Iteration is needed through the core activities

Visibility



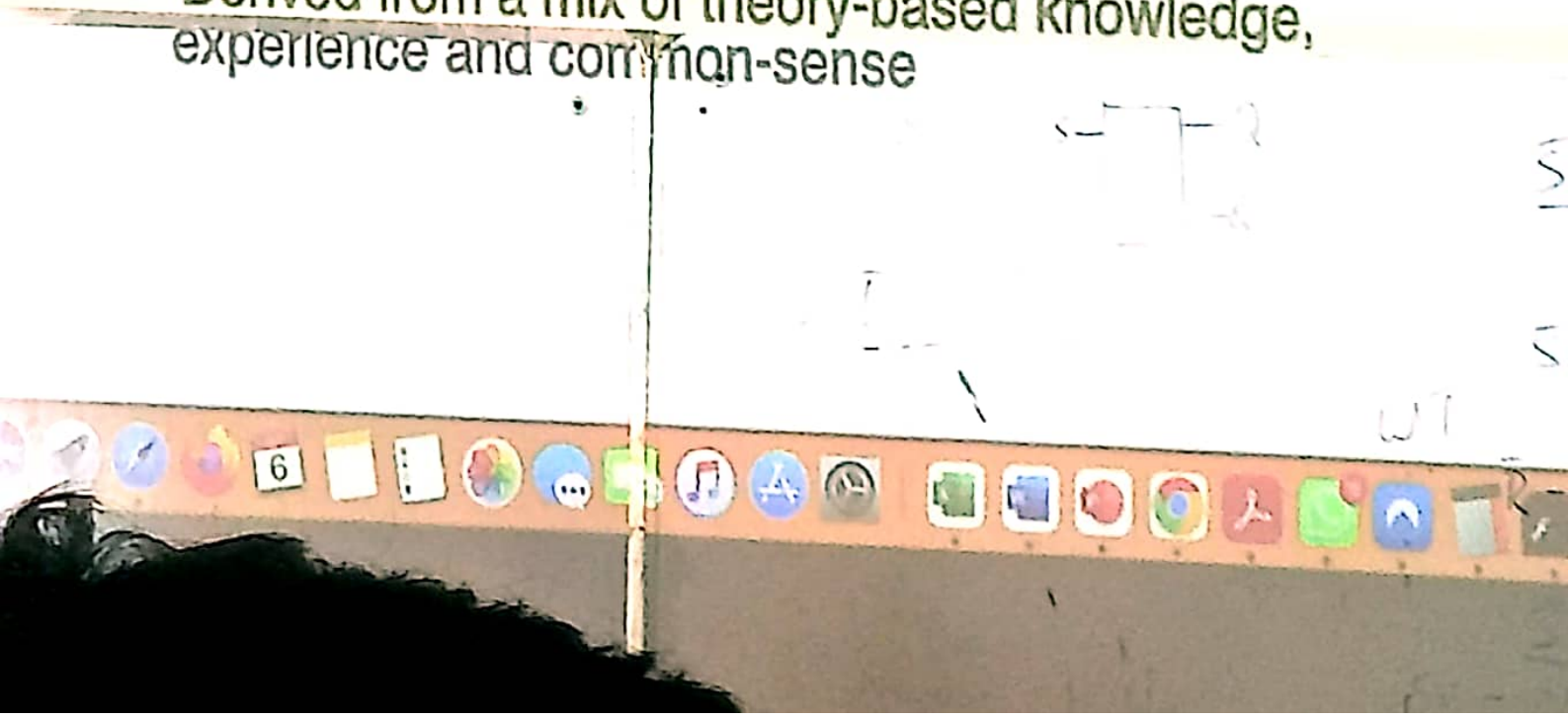
- This is a control panel for an elevator
- How does it work?
- Push a button for the floor you want?
- Nothing happens. Push any other button? Still nothing. What do you need to do?

It is not visible as to what to do!

From:
www.baddesigns.com

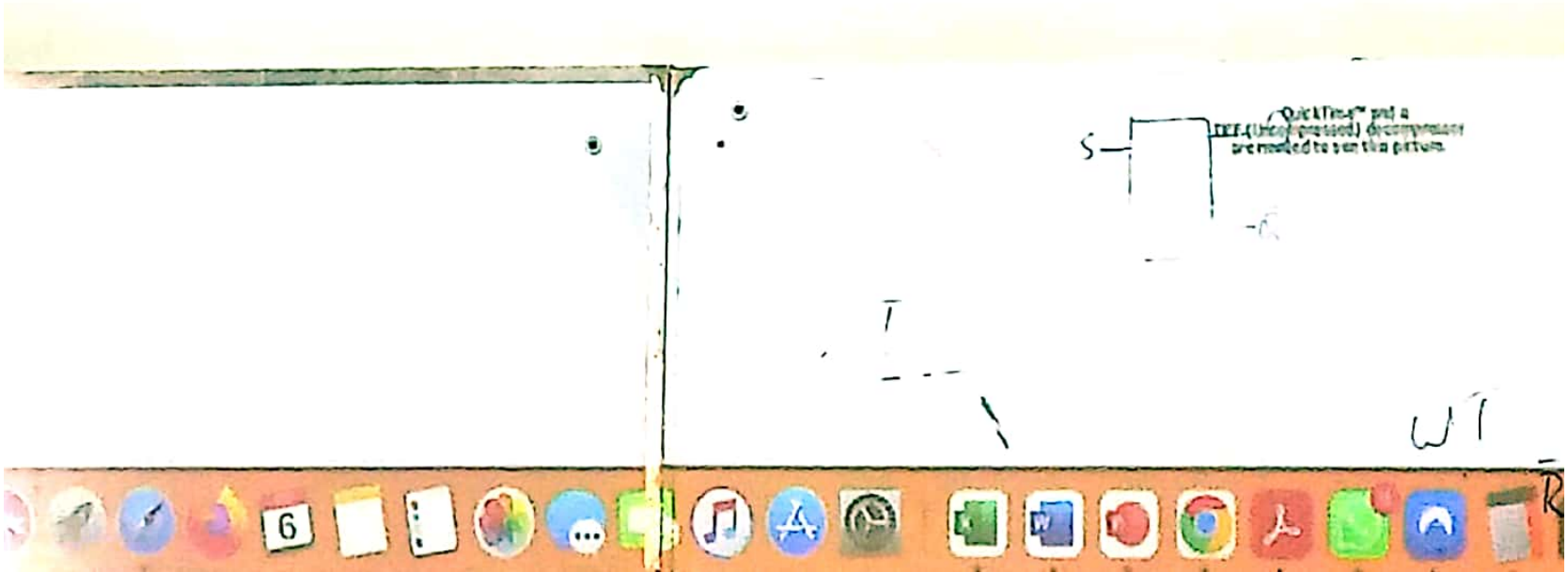
Design principles

- Generalizable abstractions for thinking about different aspects of design
- The do's and don'ts of interaction design
- What to provide and what not to provide at the interface
- Derived from a mix of theory-based knowledge, experience and common-sense



Activity on usability

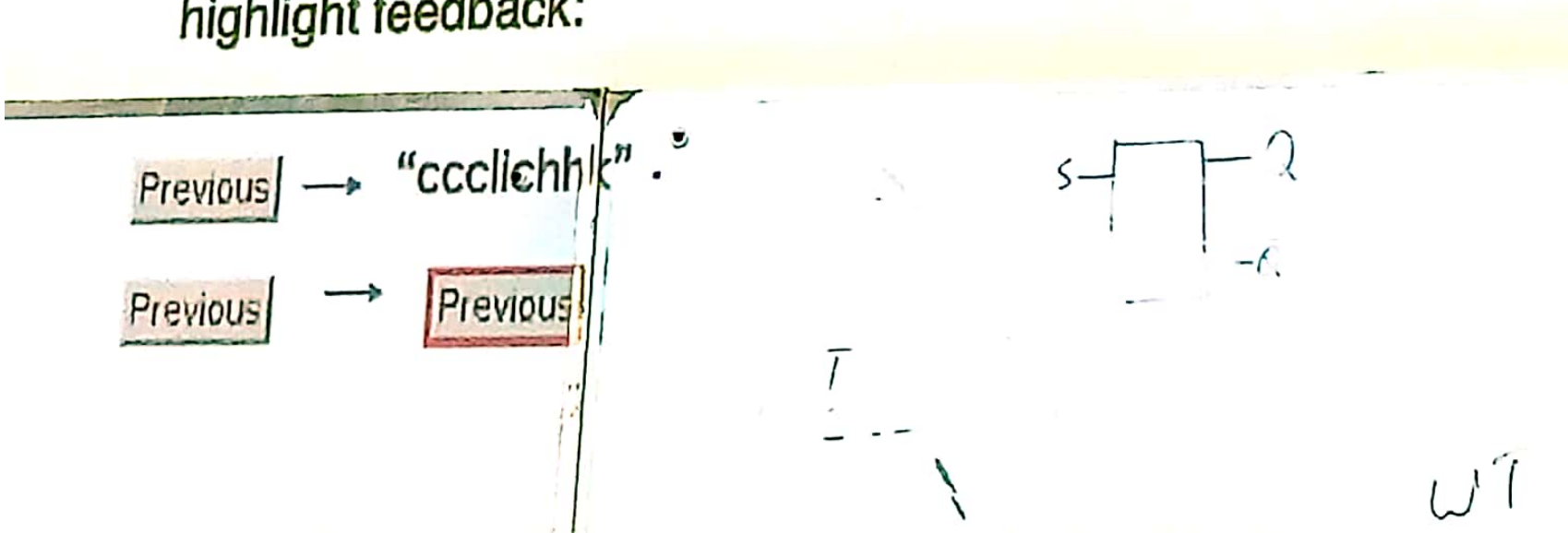
- How long should it take and how long does it actually take to:
  - Using a DVD to play a movie?
  - Use a DVD to pre-record two programs?
  - Using a web browser tool to create a website?



Feedback

- Sending information back to the user about what has been done
- Includes sound, highlighting, animation and combinations of these

  – e.g. when screen button clicked on provides sound or red highlight feedback:



Visibility

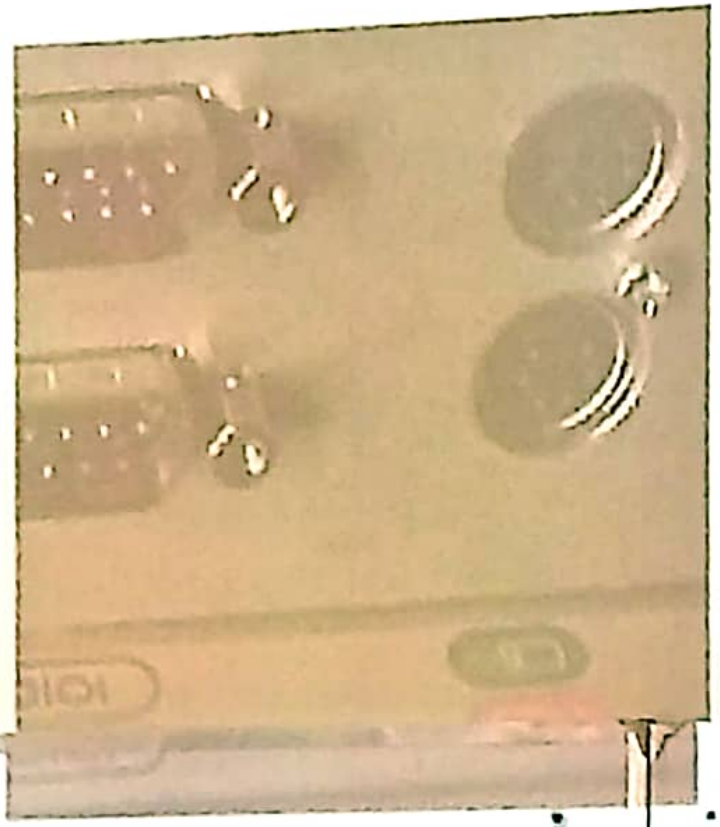
...you need to insert your room card in the slot by the buttons to get the elevator to work!

How would you make this action more visible?

- make the card reader more obvious
- provide an auditory message, that says what to do (which language?)
- provide a big label next to the card reader that flashes when someone enters

- make relevant parts visible
- make what has to be done obvious

Logical or ambiguous design?



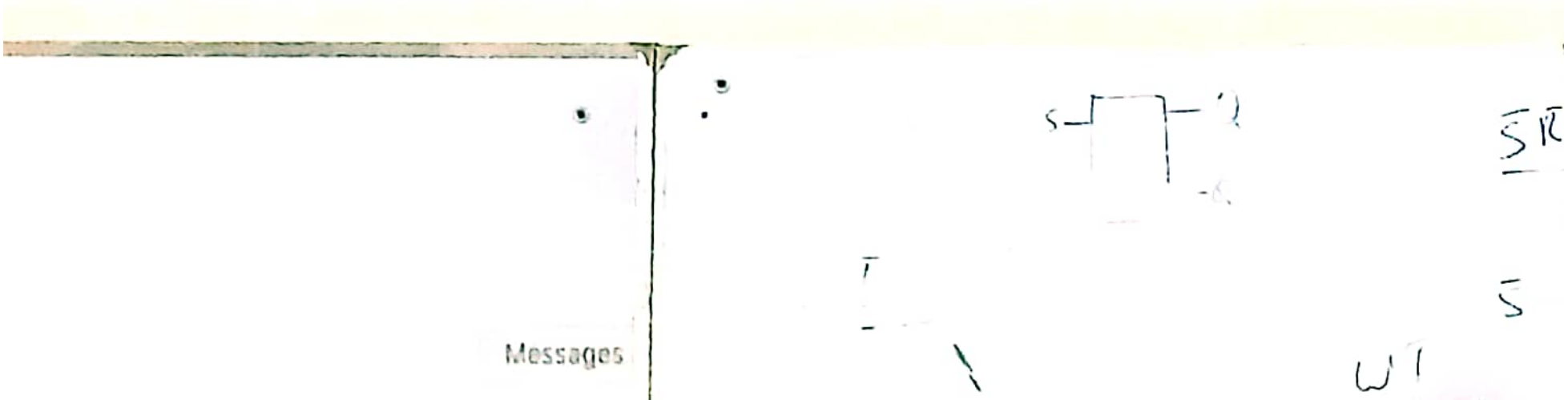
- Where do you plug the mouse?
- Where do you plug the keyboard?
- top or bottom connector?
- Do the color coded icons help?

From: www.baddesigns.com

Messages

Constraints

- Restricting the possible actions that can be performed
- Helps prevent user from selecting incorrect options
- Physical objects can be designed to constrain things
  - e.g. only one way you can insert a key into a lock

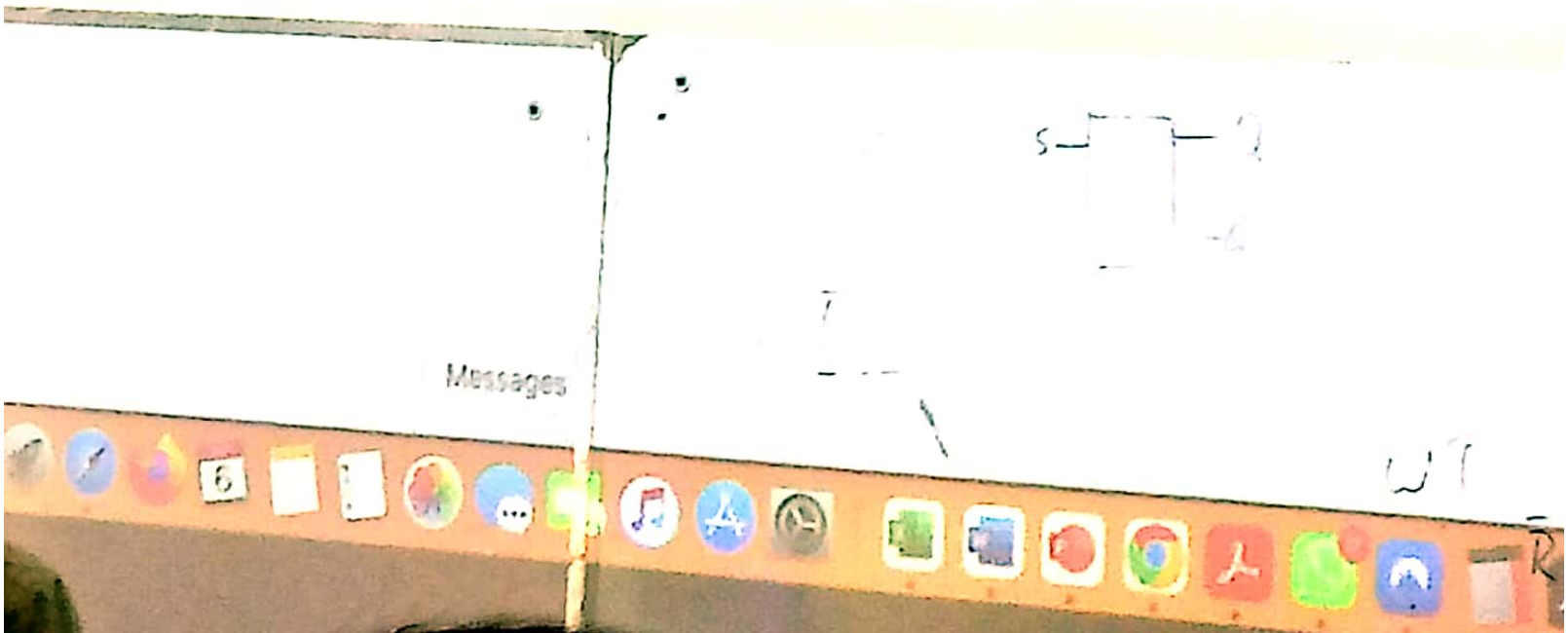


When consistency breaks down

- What happens if there is more than one command starting with the same letter?
  - e.g. save, spelling, select, style
- Have to find other initials or combinations of keys, thereby breaking the consistency rule
  - e.g. ctrl+S, ctrl+Sp, ctrl+shift+L
- Increases learning burden on user, making them more prone to errors

Consistency

- Design interfaces to have similar operations and use similar elements for similar tasks
- For example:
  - always use ctrl key plus first initial of the command for an operation – ctrl+C, ctrl+S, ctrl+O
- Main benefit is consistent interfaces are easier to learn and use



Keypad numbers layout

- A case of external inconsistency

(a) phones, remote controls

1	2	3
4	5	6
7	8	9
	0	

(b) calculators, computer keypads

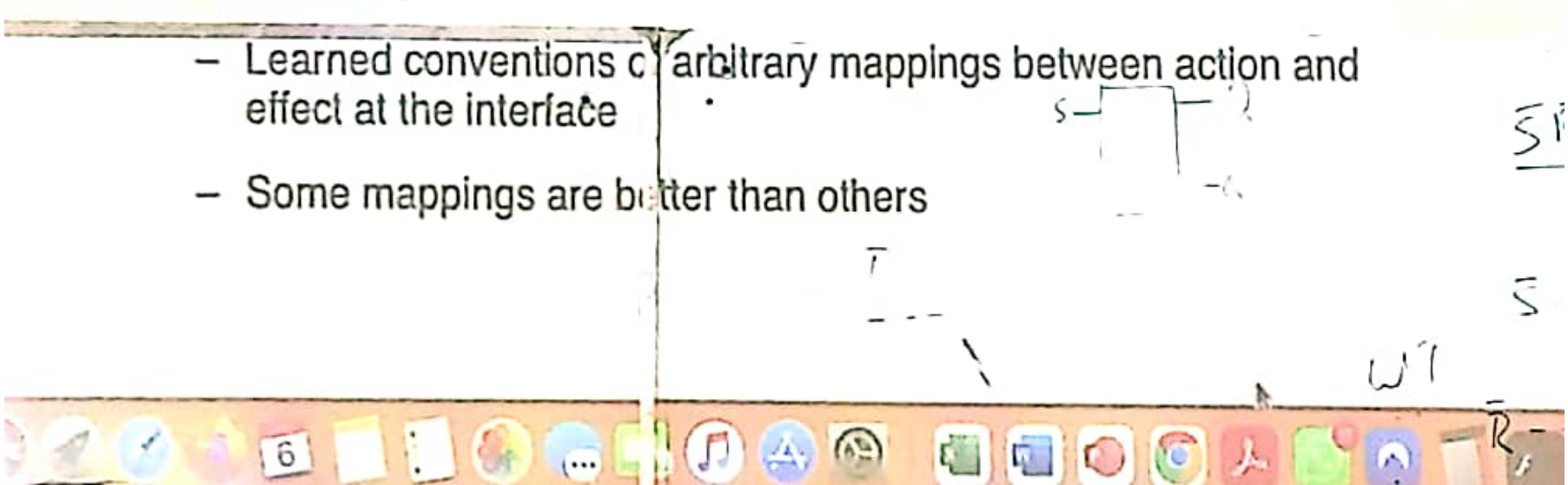
7	8	9
4	5	6
1	2	3
0		

Internal and external consistency

- Internal consistency refers to designing operations to behave the same within an application
  - Difficult to achieve with complex interfaces
- External consistency refers to designing operations, interfaces, etc., to be the same across applications and devices
  - Very rarely the case, based on different designer's preference

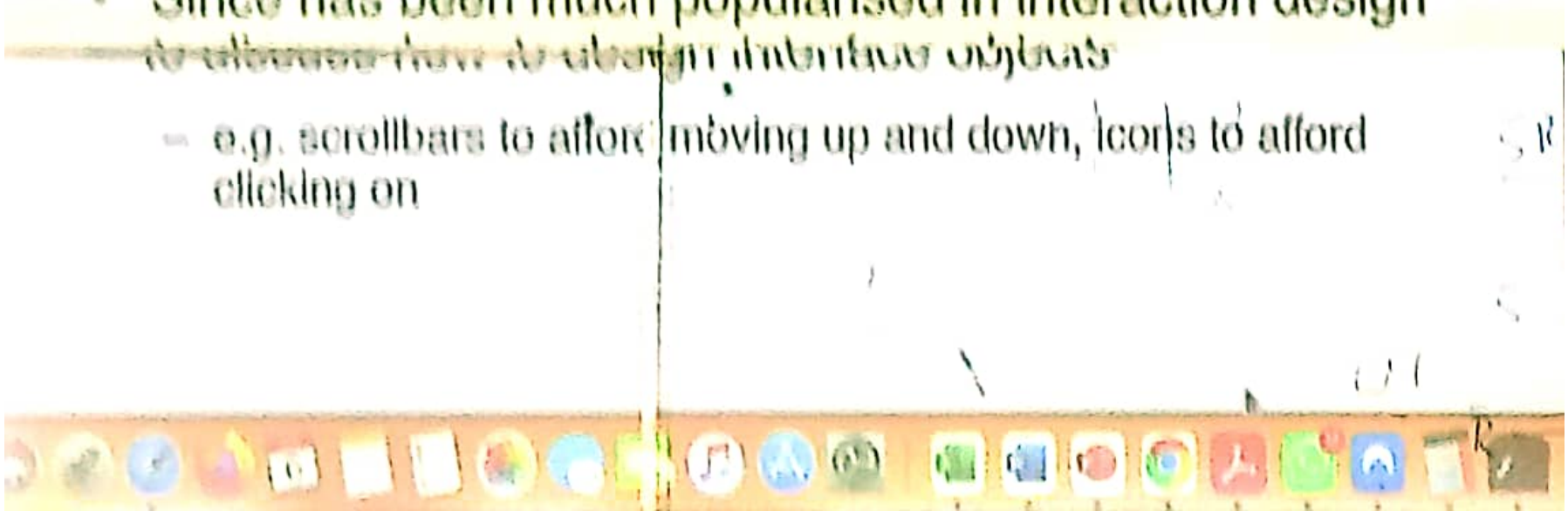
What does 'affordance' have to offer interaction design?

- Interfaces are virtual and do not have affordances like physical objects
- Norman argues it does not make sense to talk about interfaces in terms of 'real' affordances
- Instead interfaces are better conceptualized as 'perceived' affordances
  - Learned conventions of arbitrary mappings between action and effect at the interface
  - Some mappings are better than others



Affordances: to give a clue

- Refers to an attribute of an object that allows people to know how to use it
  - e.g. a mouse button invites pushing, a door handle affords pulling
- Norman (1988) used the term to discuss the design of everyday objects
- Since has been much popularised in interaction design to discuss how to design interface objects
  - e.g. scrollbars to afford moving up and down, icons to afford clicking on

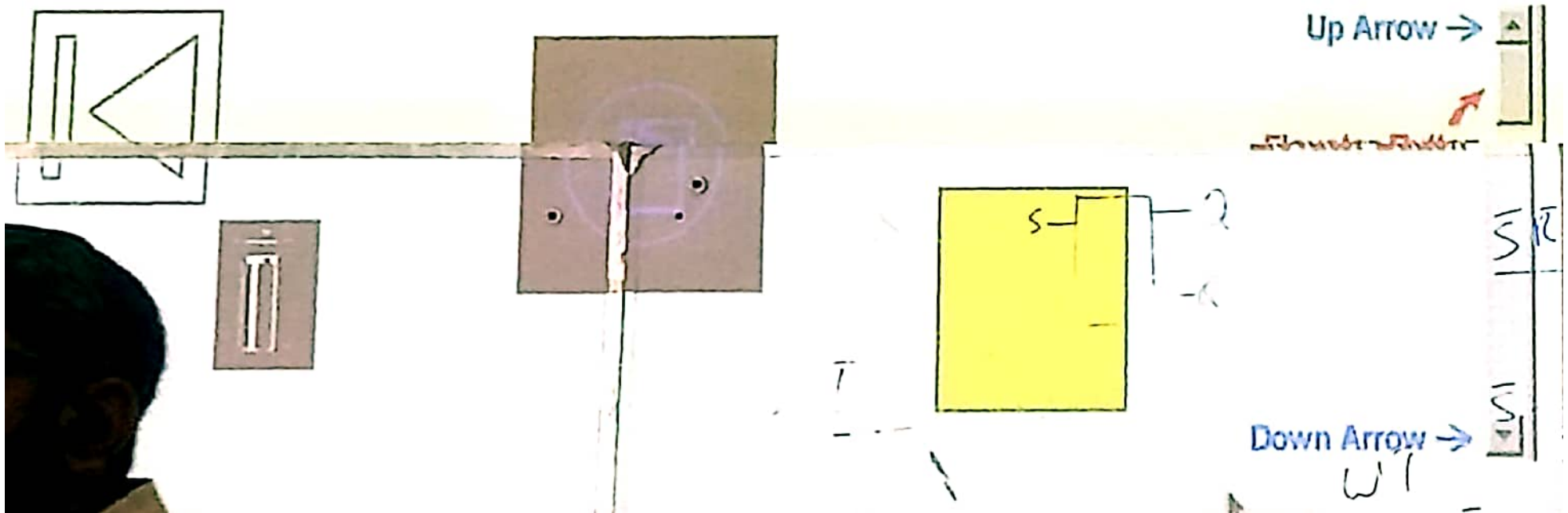


Acknowledgments

- Many of the slides for this and other lectures are adapted from:
  - Prof. Robert Miller, MIT
  - Prof. Saul Greenberg, University of Calgary

Activity

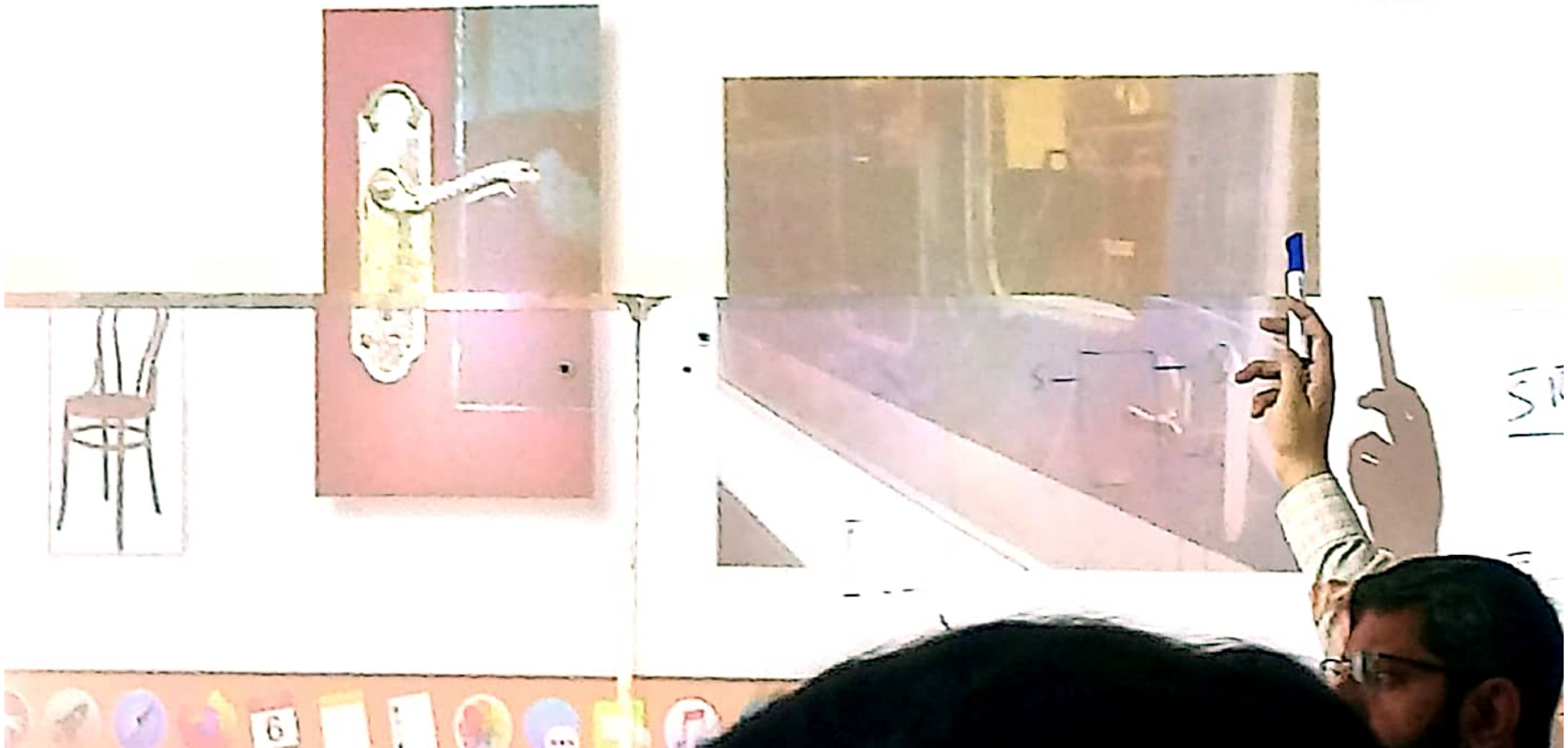
- Virtual affordances
  - How do the following screen objects afford?
  - What if you were a novice user?
  - Would you know what to do with them?



Activity

- Physical affordances:

  How do the following physical objects afford? Are the obvious?



Takeaways

- You and I are not representative users
  - Base design on knowledge about real users, not on introspection
- What you see is the last part of what you get
  - The most important aspects of user interface design are least visible: task structure, conceptual models, information flows
- User interfaces, as software products, must be engineered
  - Make engineering tradeoffs
- Design is an art
  - Not a strictly top-down process
  - There is scientific knowledge to be applied to user interface design and development
  - Cognitive science, social science, techniques from computer science

Understanding users' needs

- Need to take into account what people are good and bad at
- Consider what might help people in the way they currently do things
- Think through what might provide quality user experiences
- Listen to what people want and get them involved
- Use tried and tested user-centered methods