

Usability Evaluation

Larina Wang

PhD Student

School of Engineering and Mathematical Science

Department of CSIT

Usability Evaluation Methods

- Heuristic evaluations
- Cognitive walkthroughs
- Usability testing
- Comparison against guidelines

Usability Testing

System Usability Scale

© Digital Equipment Corporation, 1986.

	Strongly disagree				Strongly agree
1. I think that I would like to use this system frequently	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	4	5
2. I found the system unnecessarily complex	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	4	5
3. I thought the system was easy to use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	4	5
4. I think that I would need the support of a technical person to be able to use this system	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	4	5
5. I found the various functions in this system were well integrated	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	4	5
6. I thought there was too much inconsistency in this system	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	4	5
7. I would imagine that most people would learn to use this system very quickly	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	4	5
8. I found the system very cumbersome to use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	4	5
9. I felt very confident using the system	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	4	5
10. I needed to learn a lot of things before I could get going with this system	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1	2	3	4	5

NASA Task Load Index

Hart and Staveland's NASA Task Load Index (TLX) method assesses work load on five 7-point scales. Increments of high, medium and low estimates for each point result in 21 gradations on the scales.

Name	Task	Date
------	------	------

Mental Demand

How mentally demanding was the task?

Very Low
Very High

Physical Demand

How physically demanding was the task?

Very Low
Very High

Temporal Demand

How hurried or rushed was the pace of the task?

Very Low
Very High

Performance

How successful were you in accomplishing what you were asked to do?

Perfect
Failure

Effort

How hard did you have to work to accomplish your level of performance?

Very Low
Very High

Frustration

How insecure, discouraged, irritated, stressed, and annoyed were you?

Very Low
Very High



10 Usability Heuristics


by Jakob Nielsen

1. Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

United Airlines Flight 410

On-time - departs in 1 hour 41 mins

PDX  DEN

Departs Portland, today


Time	Terminal	Gate
11:48 AM	-	E2

Arrives Denver, today

Scheduled	Terminal	Gate
3:16 PM	-	B27

United Airlines Flight 410

Delayed (21 mins) - arrives in 57 mins

PDX  DEN

Departs Portland, today

Scheduled	Terminal	Gate
11:48 AM	-	E2

Arrives Denver, today

Scheduled	Terminal	Gate
3:18 PM	-	B27



1. Visibility of system status

Like how Twitter tells you when it's publishing a tweet and makes a chirp sound when it's done

The image compares two flight status displays. On the left, a Google search result for 'United Airlines Flight 410' shows 'On-time' status in green. The flight path from PDX to DEN is shown with a green plane icon. Below, the departure time is 11:48 AM and arrival is 3:17 PM. On the right, the same flight is shown as 'Delayed (21 mins)' in red. The flight path shows a red plane icon. The departure time is 11:49 AM and arrival is 3:39 PM. A red arrow points from the text above to a 'Sending Tweet' notification bar on the right, which features a blue background, a white Twitter bird icon, and a white 'Compose' icon.

Flight	Status	Departure Time	Arrival Time
United Airlines Flight 410	On-time	11:48 AM	3:17 PM
United Airlines Flight 410	Delayed (21 mins)	11:49 AM	3:39 PM

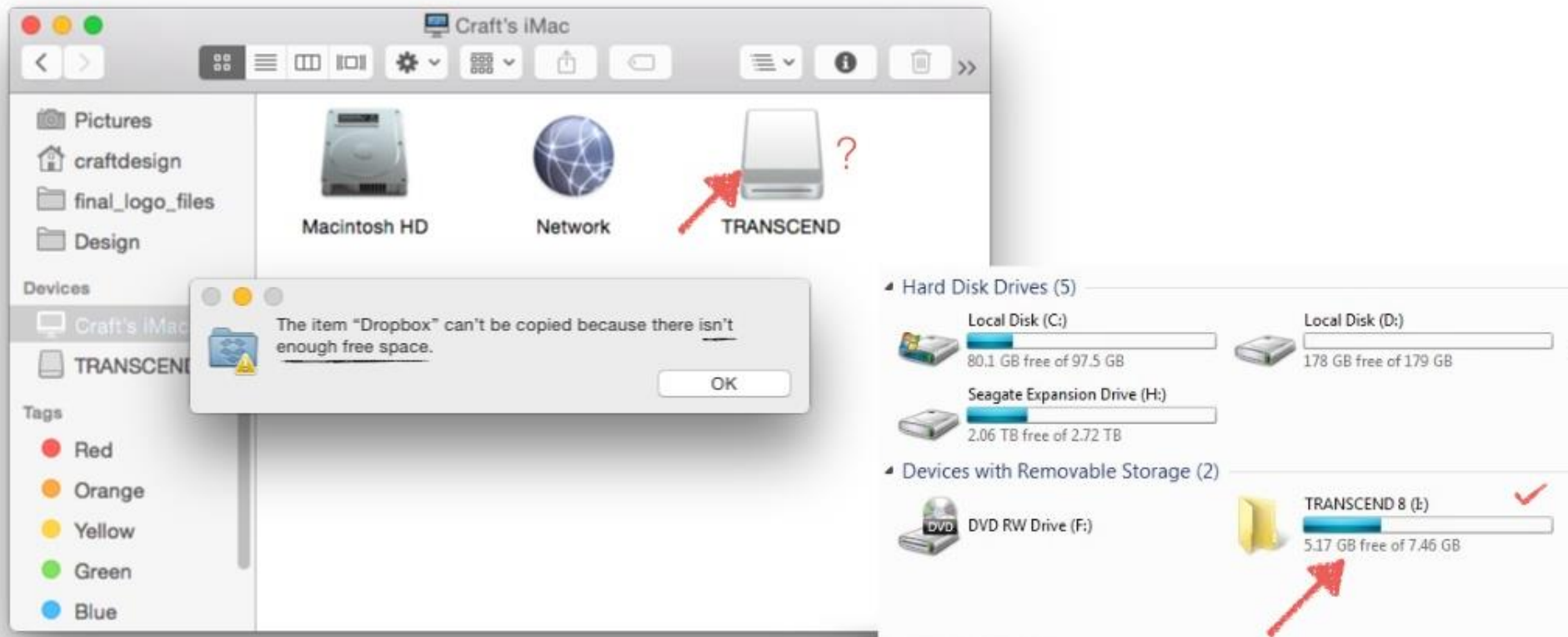
Or how the colour and position of the plane changes on Google search results to indicate if a flight is on time

1. Visibility of system status



Don't keep your users guessing.

Would it be better if the system told you how much space you have on your drive before you begin a file transfer?



2. Match between system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.



How can we help you?

Live Updates

Delayed Response from Customer Care

We're really busy at the moment which means it may take a little longer than usual to get back to you. [More Info](#)



ORDERS

- Amend order
- Cancel order
- Sizing and care guides

[SEE ALL](#)



PAYMENT

- Payment types
- Promo codes
- When will I be charged?

[SEE ALL](#)



DELIVERY

- Where's my order?
- International deliveries
- UK deliveries

[SEE ALL](#)



RETURN

- Have you
- Have you
- International
- Can I ex

2. Match between system and the real world

Buttons can be like real world conversations instead of labels.



Clearer and more effective than “FAQs”

How can we help you?

Search help

Live Updates

Delayed Response from Customer Care

We're really busy at the moment which means it may take a little longer than usual to get back to you. [More Info](#)



ORDERS

- Amend order
- Cancel order
- Sizing and care guides

[SEE ALL](#)



PAYMENT

- Payment types
- Promo codes
- When will I be charged?

[SEE ALL](#)



DELIVERY

- Where's my order?
- International deliveries
- UK deliveries

[SEE ALL](#)



RETURN

- Have you
- Have you
- International
- Can I ex

2. Match between system and the real world



Refrain from confusing people with system oriented language and design.



3. User control and freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

Sending... [Cancel](#)

Your message has been sent. [Undo](#) [View message](#)

Your Cart



Lights, Camera, Capture

12th edition. Bob Davis

ISBN-10: 047054953X

ISBN-13: 9780470549537



Chapter 1: Introduction

\$1.99



Chapter 4: Lighting Equipment

\$1.99

Enter promo code

APPLY

Amount Due: **\$3.98**

3. User control and freedom

Allow people to change or delete items in a shopping cart as seen in this example from Inkling. It's also useful to allow them to continue shopping.

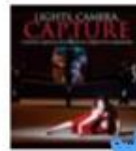
Sending... [Cancel](#)

Your message has been sent. [Undo](#) [View message](#)

Ever felt the need for an undo button after sending an email to the wrong person?

It's a good thing Gmail allows that.

Your Cart



Lights, Camera, Capture

12th edition. Bob Davis

ISBN-10: 047054953X

ISBN-13: 9780470549537



Chapter 1: Introduction

\$1.99



Chapter 4: Lighting Equipment

\$1.99

Enter promo code

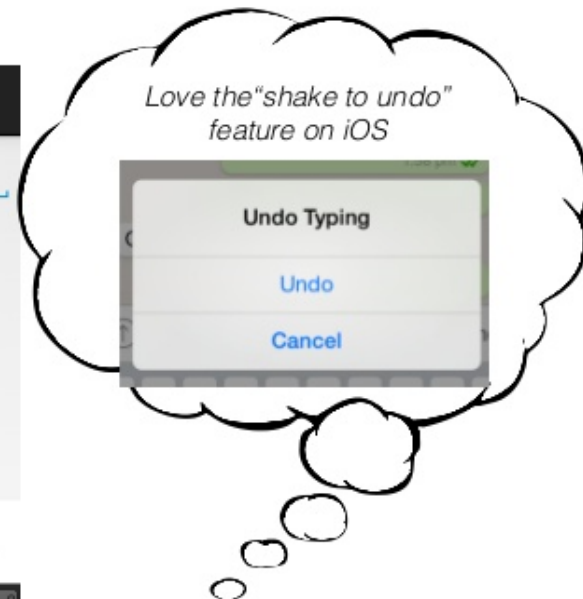
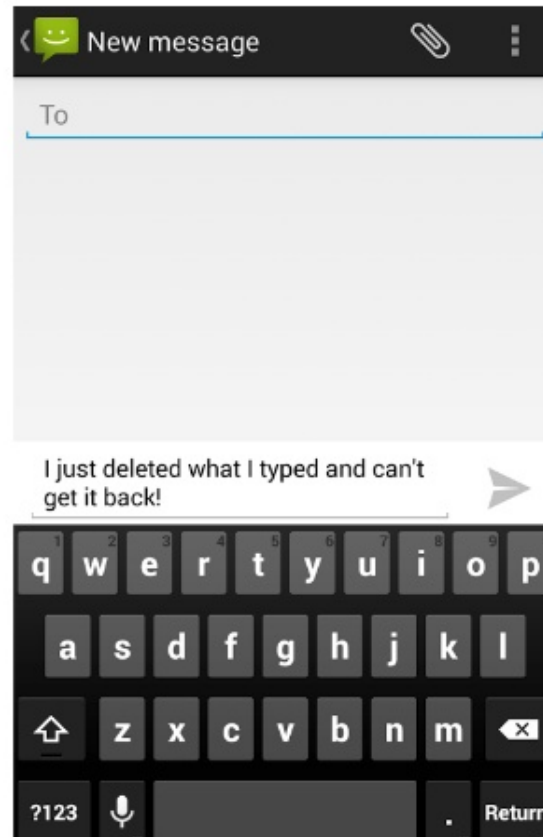
APPLY

Amount Due: **\$3.98**

3. User control and freedom

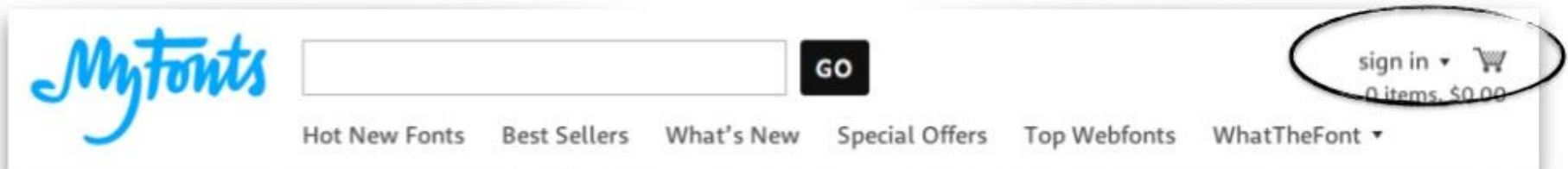


There is no way to undo a text edit on Android!
Avoid pissing the user off by giving him no choice to revert to an earlier state.



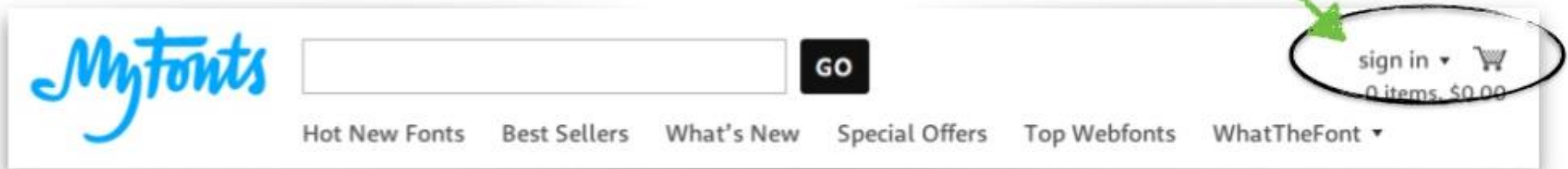
4. Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.



4. Consistency and standards

As a convention, people expect call to actions like Sign In to be at the top right on any website

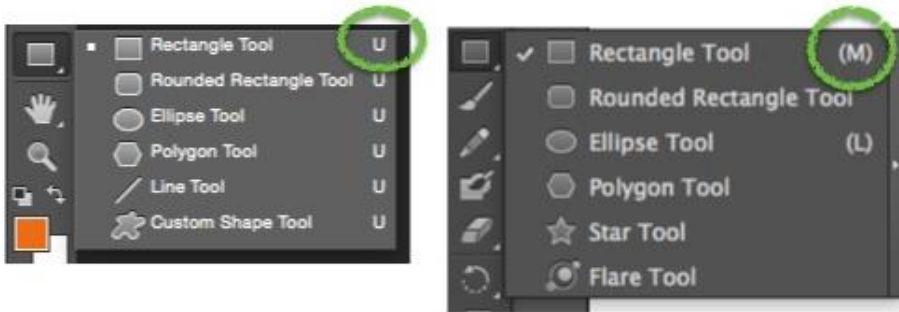


4. Consistency and standards



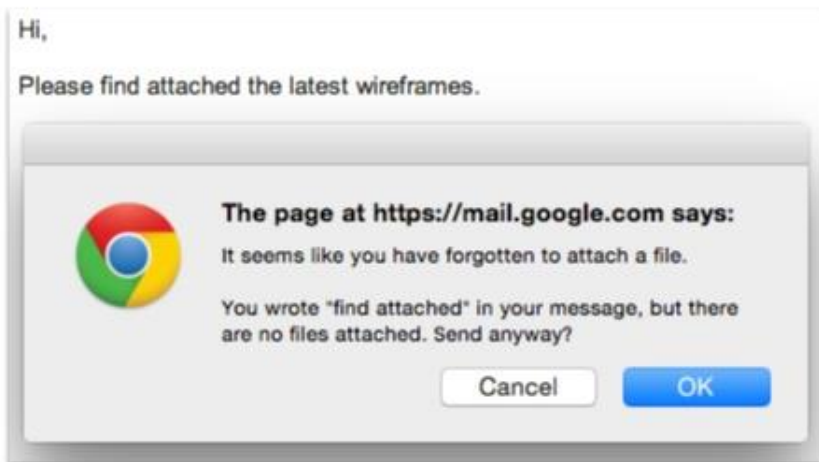
One would expect the knob to be the volume control, but it's not.

Similar functions have different shortcuts in Adobe's various software.



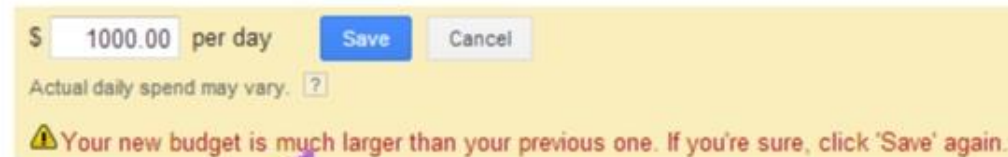
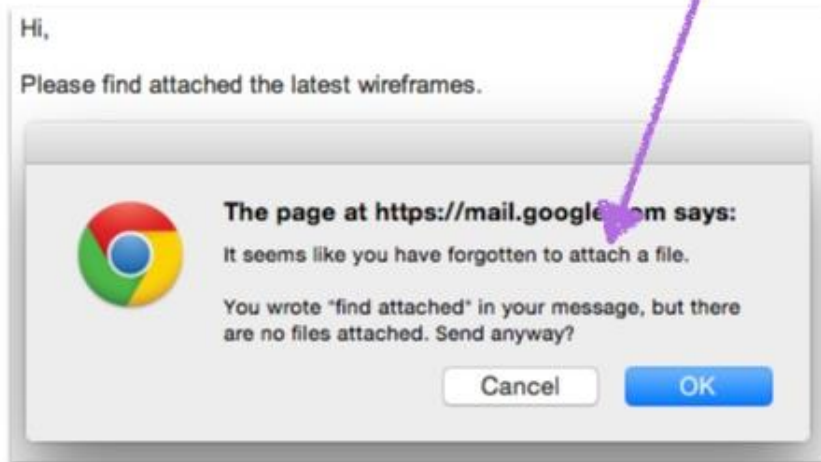
5. Error prevention

Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.



5. Error prevention

Gmail prompts you when you forget to insert an attachment



On Google Ads, if you input a budget much larger than your previous one, the system checks with you if you really meant to do so.

5. Error prevention



Facebook does not try and prevent you from posting an ad that is against its guidelines. e.g. There is no way for a first time user to assume that his ad might get pulled off mid-campaign because Facebook might later find it inappropriate.

The screenshot displays the Facebook Ads Manager interface. A table lists ad performance metrics, and a red arrow points to an 'Error' icon in the 'Promotion' column. A modal window explains the error: 'Your Post wasn't boosted because it uses too much text in its image, which violates Facebook's ad guidelines. Sponsored images that show in the News Feed can't include more than 20% text. The post remains published, but it is not running as an ad. You'll still be charged for any impressions or clicks your ad received before it was disapproved.' Below the error message, a summary shows 435 Paid Reach, 19 Engagement, and \$4.07 Budget Spent. In the background, a 'WE'RE HIRING' ad is visible with 38 likes, 1 comment, and 3 shares. To the right, the 'Boost your post' configuration panel is shown, with options for Audience, Location (Bangalore, Mumbai, Pune), Age (20-31), and Gender (All).

Post	Total Reach?	Paid Reach?	Promotion
Thursday Facebook Special One Day O...	714	435	Error

435
Paid Reach [?]

19
Engagement [?]

\$4.07
Budget Spent

WE'RE HIRING

Like · Comment · Share · 38 1 3

Boost your post to reach more people. Learn more.

Audience

- ☐ People who like your Page and their friends [?]
- ☒ People you choose through targeting [?]

Location

Cities ▾ + 10 miles ▾

Bangalore, India ×
Mumbai, India × Pune, India ×

Age

20 ▾ - 31 ▾

Gender

All Men Women

Interests [?]

6. Recognition rather than recall

Minimise the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

The screenshot shows a user interface for searching for hotels. On the left is a vertical sidebar with navigation options: Flights, Hotels (selected), Flight + Hotel, Trains, Buses, Weekend getaways (marked with a 'NEW' badge), Collections, Waytogo, and Mobile. The main content area is titled 'Search for hotels' with the subtitle 'Over 100,000 hotels around the world'. Below this are two radio buttons: 'Hotels' (selected) and 'Weekend Getaways' (marked with a 'NEW' badge). To the right of these buttons is a circular logo for 'WEEKEND GETAWAYS' featuring a car icon and the text 'Escape. Every Weekend.' Below the radio buttons is a 'Where' section with a text input field labeled 'Enter a city, area, landmark or hotel'. Further down are 'Check-in' and 'Check-out' sections, each with a 'Pick a date' label and a calendar icon. Below these are three dropdown menus for 'Rooms' (set to 1), 'Adults' (set to 1, with '12+ yrs' below), and 'Children' (set to 0, with '0-11 yrs' below). At the bottom right is a large orange button labeled 'Search hotels'.

6. Recognition rather than recall

The image shows a screenshot of the Expedia website's search interface. On the left is a vertical sidebar with navigation options: Flights, Hotels, Flight + Hotel, Trains, Buses, Weekend getaways (marked with a 'NEW' badge), Collections, Waytogo, and Mobile. The main content area is titled 'Search for hotels' in large, bold black text, with the subtitle 'Over 100,000 hotels around the world'. Below this are two radio buttons: 'Hotels' (selected) and 'Weekend Getaways' (marked with a 'NEW' badge). A teal arrow points from the text 'Clear proposition' to the 'Search for hotels' title. Below the radio buttons is a 'Where' search bar with the placeholder text 'Enter a city, area, landmark or hotel'. To the right of the search bar is a circular orange badge with a car icon and the text 'WEEKEND GETAWAYS' and 'Escape. Every Weekend.' A teal arrow points from the text 'Instructions prompting the user to explore' to this badge. Below the search bar are fields for 'Check-in' and 'Check-out', each with a 'Pick a date' button and a calendar icon. At the bottom are three dropdown menus for 'Rooms' (set to 1), 'Adults' (set to 1, with '12+ yrs' below), and 'Children' (set to 0, with '0-11 yrs' below). A teal arrow points from the text 'A single bold call to action leaves no room for distraction' to the 'Search hotels' button, which is a large orange button at the bottom right. The entire interface is set against a light gray background.

Clear proposition

Search for hotels

Over 100,000 hotels around the world

☒ Hotels ☐ Weekend Getaways NEW

Where
Enter a city, area, landmark or hotel

Check-in
Pick a date

Check-out
Pick a date

Rooms
1

Adults
1
12+ yrs

Children
0
0-11 yrs

Search hotels

Instructions prompting the user to explore

Escape. Every Weekend.

A single bold call to action leaves no room for distraction

6. Recognition rather than recall



Important actions should be easy to access and identify.

In an earlier version of Windows 8, it was almost impossible to shut down the computer without googling how to do it.

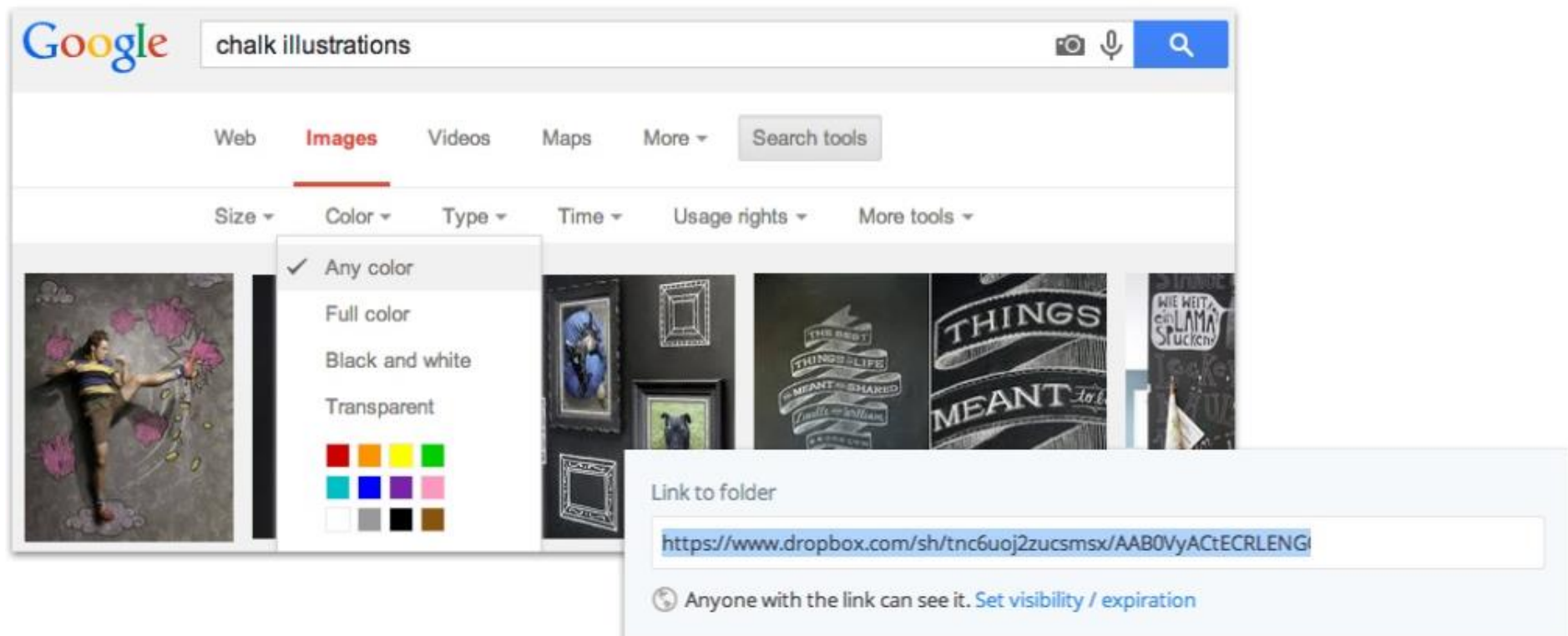
How To Shutdown Windows 8

1. Close all desktop apps you have opened.
2. Swipe in from the right edge of the screen, and then tap Settings. If you're using a mouse, point to the upper-right corner of the screen, move the mouse pointer down, and then click Settings.



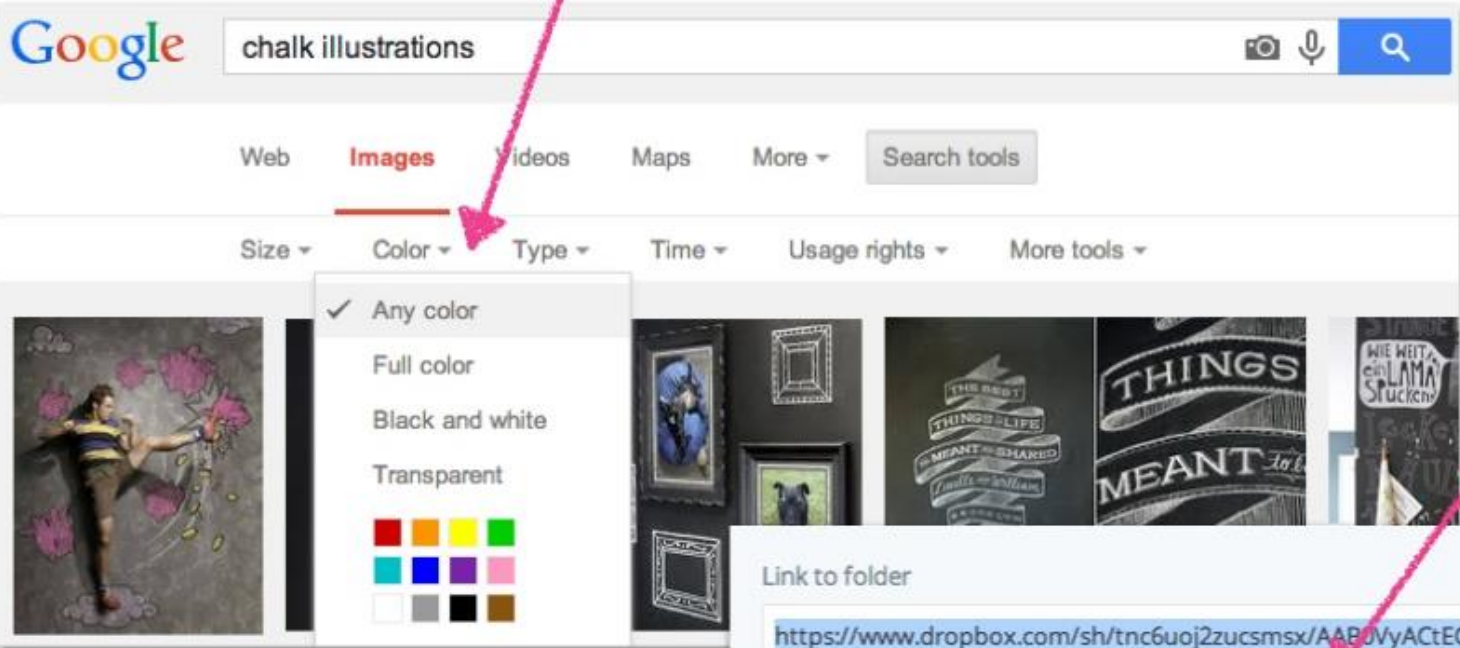
7. Flexibility and efficiency of use

Accelerators - unseen by the novice user - may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.



7. Flexibility and efficiency of use

Advanced users can use filters on Google Images to narrow down their search results.



The screenshot shows the Google Images search interface for the query "chalk illustrations". The "Images" tab is selected, and the "Color" filter dropdown is open, showing options: "Any color" (selected), "Full color", "Black and white", and "Transparent". Below these are color swatches for red, orange, yellow, green, cyan, blue, purple, pink, white, grey, black, and brown. A pink arrow points from the text "Advanced users can use filters on Google Images to narrow down their search results." to the "Color" filter dropdown. Another pink arrow points from the text "When you share a file on Dropbox, you can simply copy the link, or set advanced options." to a sharing overlay. The overlay shows a "Link to folder" with the URL <https://www.dropbox.com/sh/tnc6uoj2zucsmxsx/AABoVyActECRENGI> and a visibility setting of "Anyone with the link can see it. Set visibility / expiration".

When you share a file on Dropbox, you can simply copy the link, or set advanced options.

7. Flexibility and efficiency of use



This feature request highlights the frustration of an advanced user not being able to customise default features.

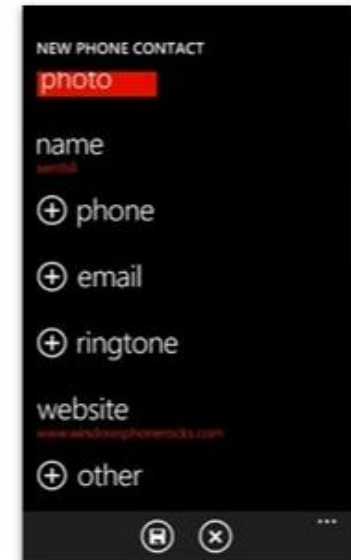
810
votes

Vote

Please allow custom labels for phone numbers, emails, addresses. home 1, home 2, work 1, work 2 just doesn't cut it any more.

Please allow custom labels for phone numbers, emails, addresses. home 1, home 2, work 1, work 2 just doesn't cut it any more.

I want to label multiple telephone numbers for a frequent traveler as "mobile (usa)" or "mobile (aus)" or mobile (eur). Or for my favorite pizza chain as downtown and midtown. Or I don't want to create my customer's secretary as a separate contact instead I want to put her under my customer's contact card and label her phone as "Cindy".



8. Aesthetic and minimalist design

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

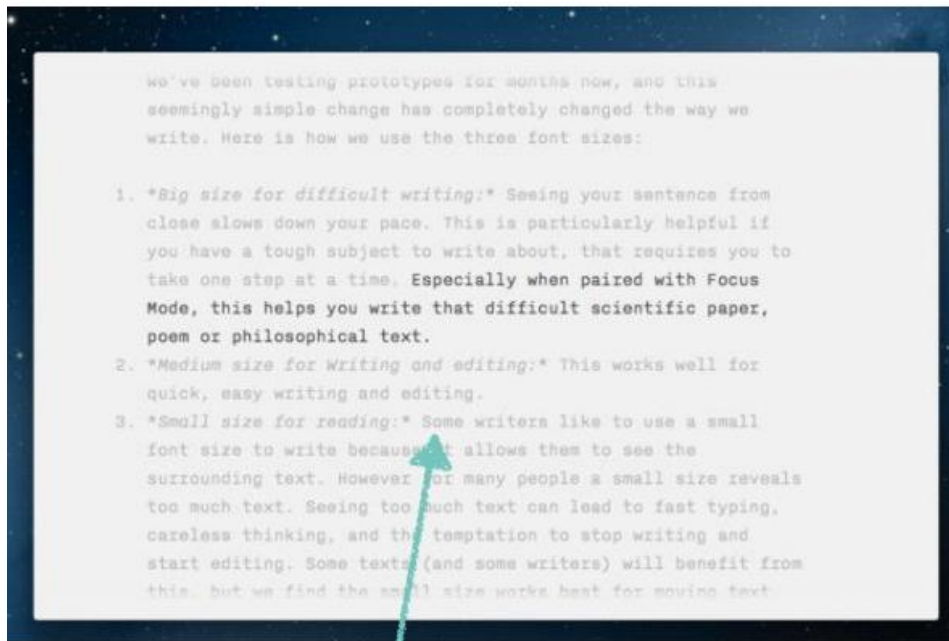
we've been testing prototypes for months now, and this seemingly simple change has completely changed the way we write. Here is how we use the three font sizes:

1. **Big size for difficult writing:** Seeing your sentence from close slows down your pace. This is particularly helpful if you have a tough subject to write about, that requires you to take one step at a time. Especially when paired with Focus Mode, this helps you write that difficult scientific paper, poem or philosophical text.
2. **Medium size for Writing and editing:** This works well for quick, easy writing and editing.
3. **Small size for reading:** Some writers like to use a small font size to write because it allows them to see the surrounding text. However for many people a small size reveals too much text. Seeing too much text can lead to fast typing, careless thinking, and the temptation to stop writing and start editing. Some texts (and some writers) will benefit from this, but we find the small size works best for moving text



8. Aesthetic and minimalist design

Dieter Ram's designs reflect this principle. "Less, but better – because it concentrates on the essential aspects, and the products are not burdened with non-essentials."

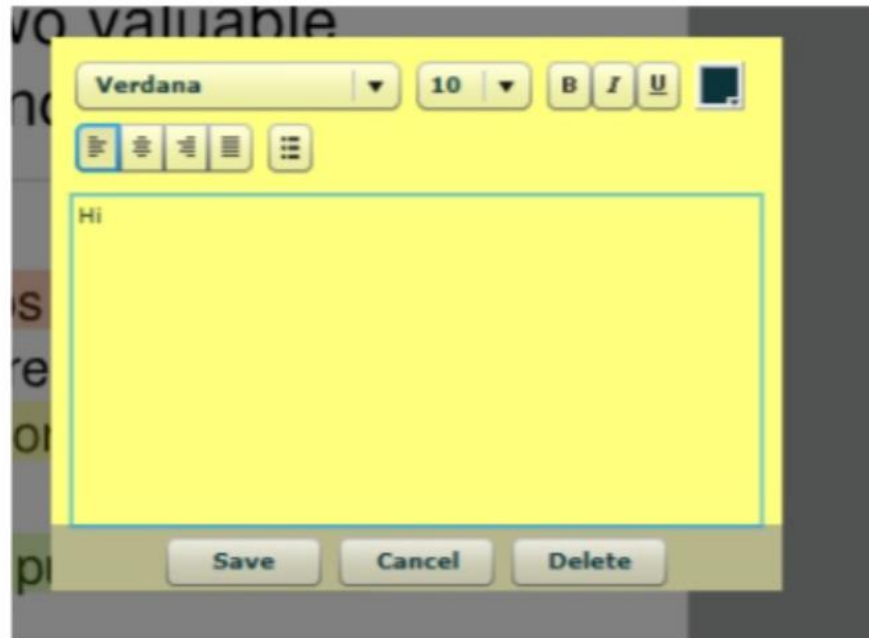


The iA Writer app is a clean typing sheet with no distractions in the interface. It allows you to focus on what you're writing and hides everything else.

8. Aesthetic and minimalist design

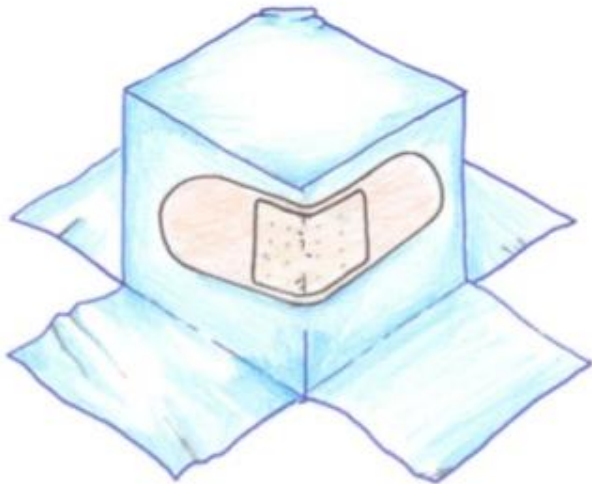


Avoid overloading the interface with features . Examine every element and ask - is this really needed?



9. Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.



Error

Something went wrong. Don't worry, your files are still safe and the Dropboxers have been notified. Check out our [Help Center](#) and [forums](#) for help, or head back to [home](#).

mint.com

ERROR 404

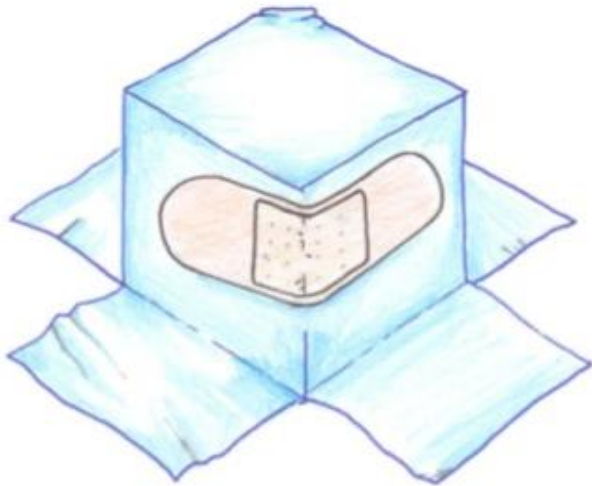
Page not available. But Justin is.

Justin is a Mint developer who likes slow cars, sharp crayons, reheated pizza and awkward silence. Email him at [justin \[at \] mint.com](mailto:justin@mint.com).

But if you're more interested in personal finance than in Justin, try the links below:

9. Help users recognize, diagnose, and recover from errors

An assuring error message on Dropbox



Error

Something went wrong. Don't worry, your files are still safe and the Dropboxers have been notified. Check out our [Help Center](#) and [forums](#) for help, or head back to [home](#).

A funny message keeps the audience engaged, while relevant links make sure they stay on your website.



ERROR 404

Page not available. But Justin is.

Justin is a Mint developer who likes slow cars, sharp crayons, reheated pizza and awkward silence. Email him at [justin \[at\] mint.com](mailto:justin@mint.com).

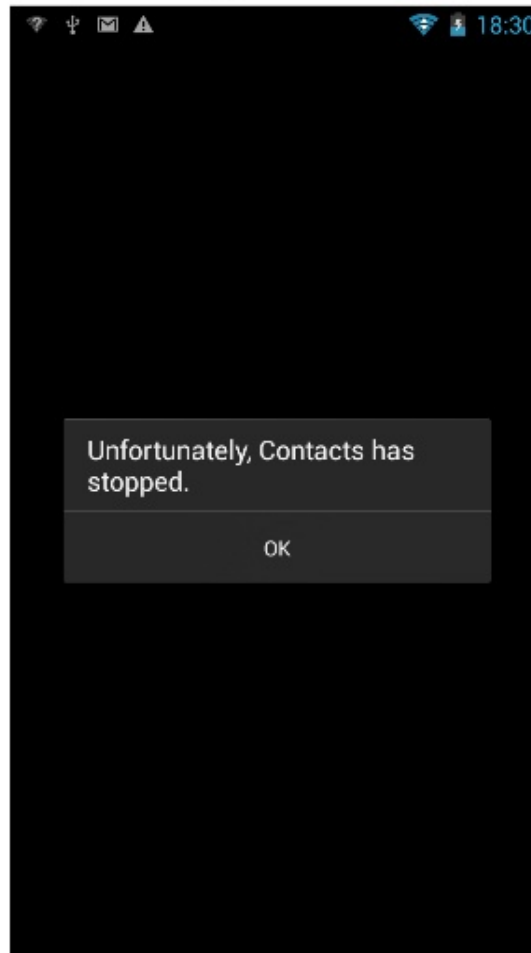
But if you're more interested in personal finance than in Justin, try the links below:



9. Help users recognize, diagnose, and recover from errors

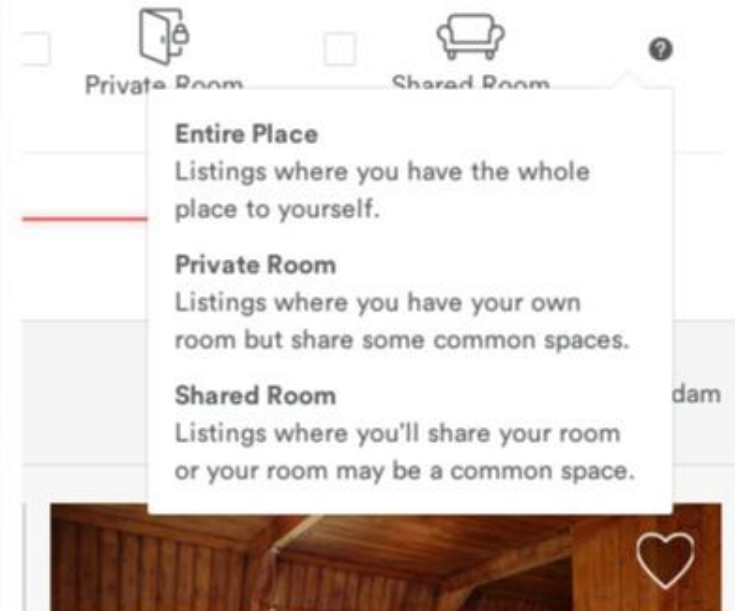
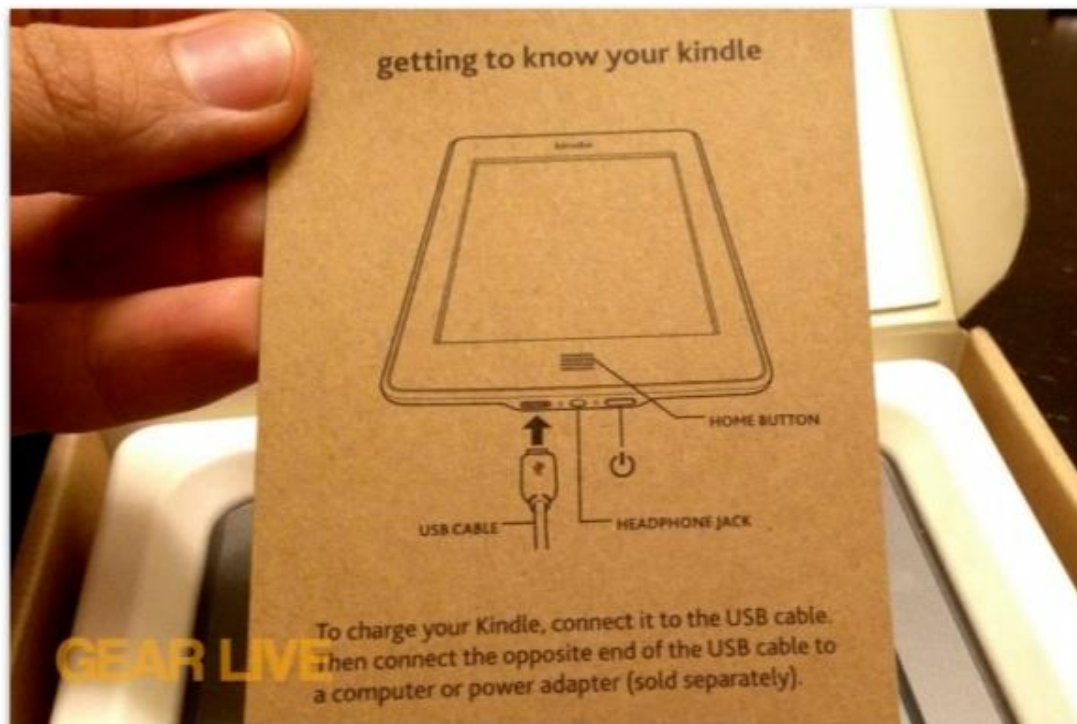


Don't tell people that something's broken and can't be fixed.



10. Help and documentation

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

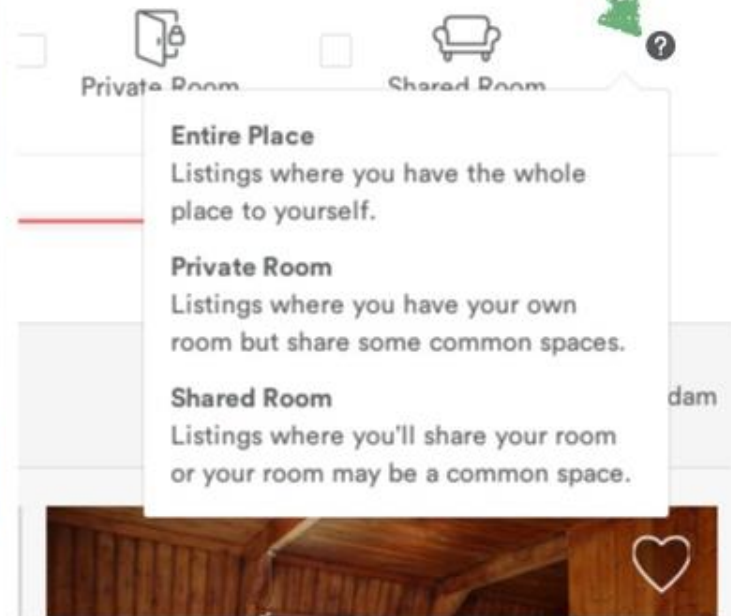


10. Help and documentation


The Kindle comes with an instruction card tucked inside the box flap, instead of a long boring manual



Contextual help on AirBnB provides explanations where they are needed most frequently



10. Help and documentation

 *If only diapers came with an easy tutorial!*





Thank you