
Usability & Psychology of Design

Usability

10 Usability Heuristics

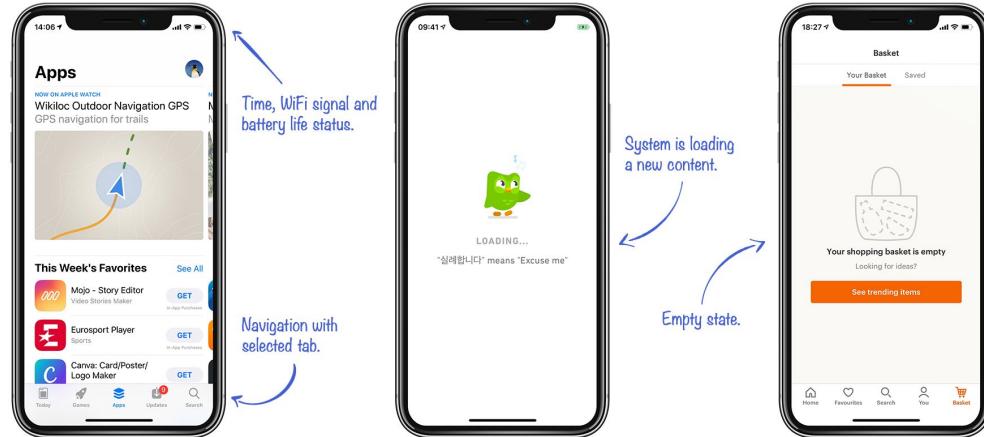
By Jakob Nielsen.

They are called "heuristics" because they are broad rules of thumb and not specific usability guidelines.

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

Visibility of system status

The design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time.

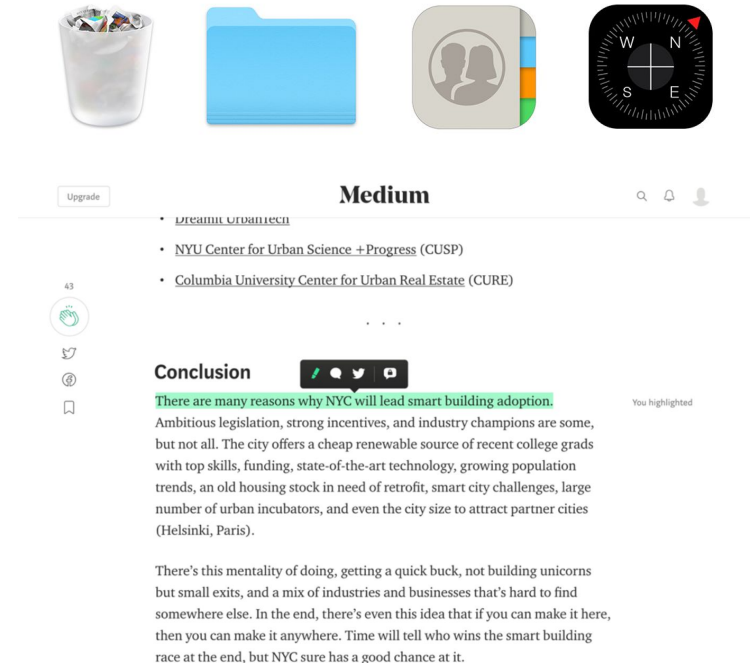


Match between system and the real world

The design should speak the users' language.

Use words, phrases, and concepts familiar to the user, rather than internal jargon.

Follow real-world conventions, making information appear in a natural and logical order.



User control and freedom

Users often perform actions by mistake.

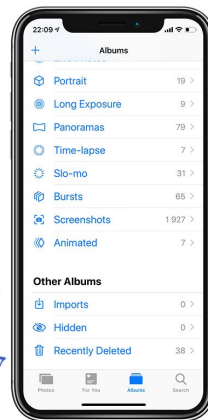
They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process.



Undo the unwanted action.



Exit the navigation anytime.

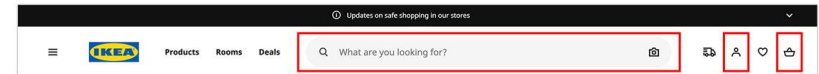
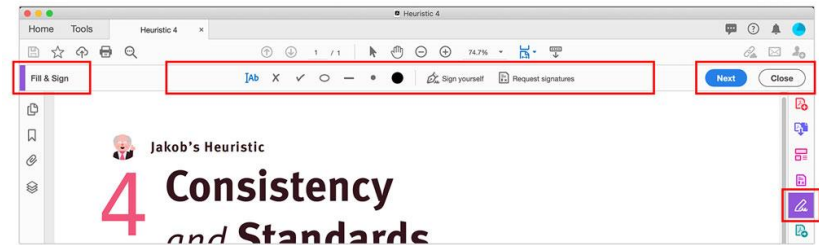
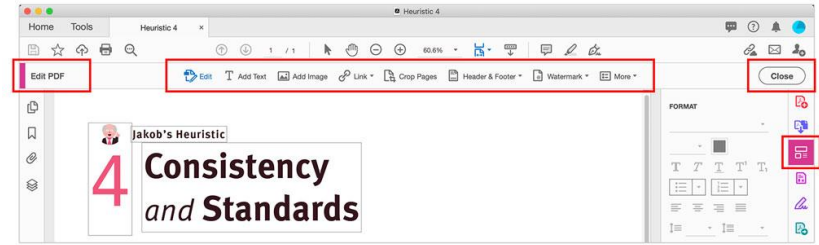


Recover your accidentally deleted files.

Consistency and standards (Jakob's Law)

Users spend most of their time on other apps. This means that users prefer your app to work the same way as all the other apps they already know.

Follow platform and industry conventions.



Error prevention

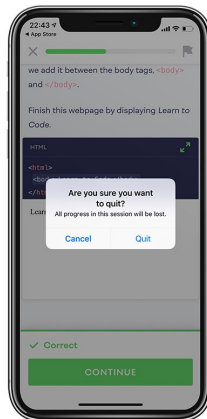
Good error messages are important, but the best designs carefully prevent problems from occurring in the first place.

Either eliminate error-prone conditions, or check for them and present users with a confirmation option before they commit to the action.

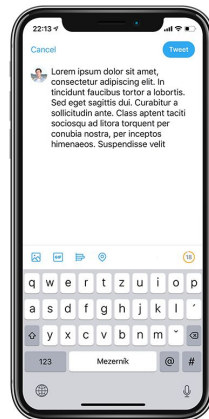
It seems like you have forgotten to attach a file.

You wrote "are attached" in your message, but there are no files attached. Send anyway?

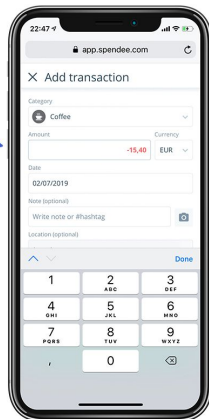
Cancel OK



Confirmation dialog
before a potentially
dangerous operation.



The input doesn't
let you write
an invalid value.



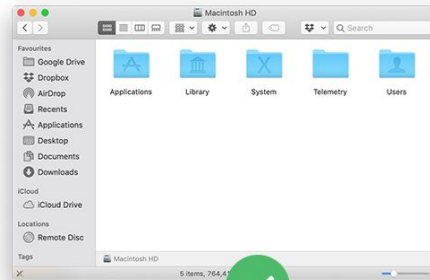
Subtle information
about reaching
the character limit.

Recognition rather than recall

Minimize the user's memory load by making elements, actions, and options visible.

The user should not have to remember information from one part of the interface to another.

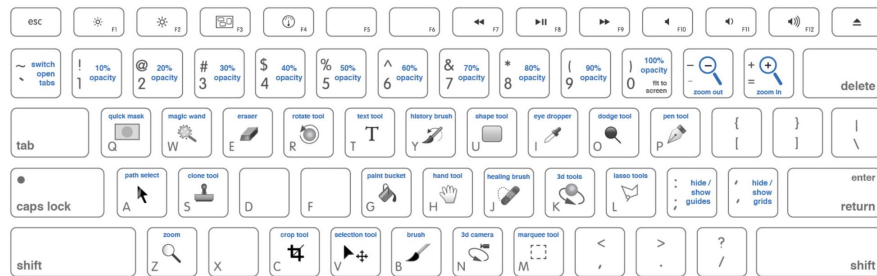
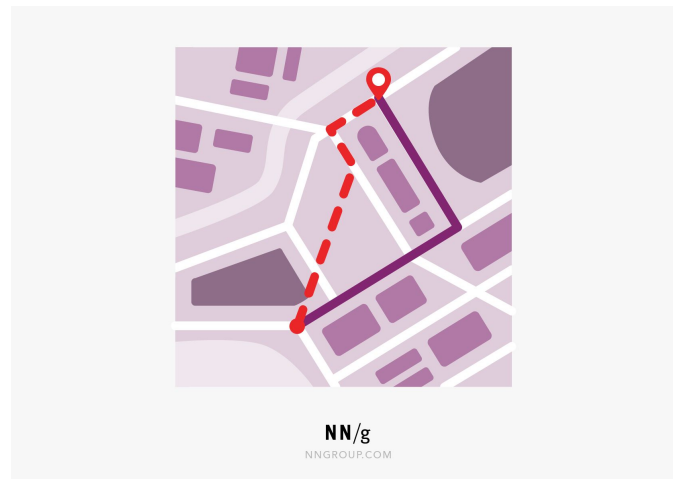
Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed.



Flexibility and efficiency of use

Shortcuts — hidden from novice users — may speed up the interaction for the expert user such that the design can cater to both inexperienced and experienced users.

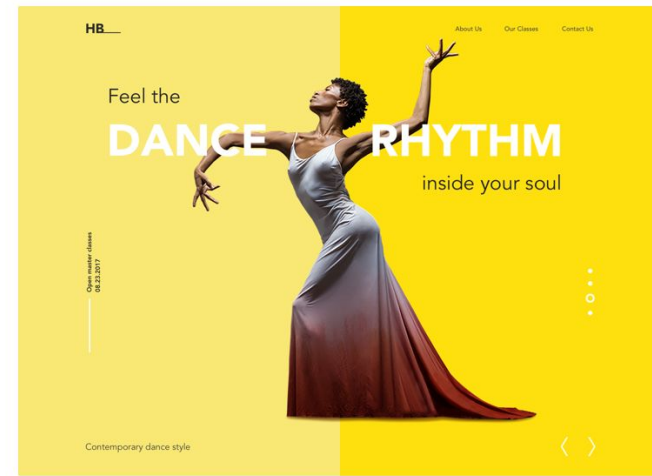
Allow users to tailor frequent actions.



Aesthetic and minimalist design

Interfaces should not contain information which is irrelevant or rarely needed.

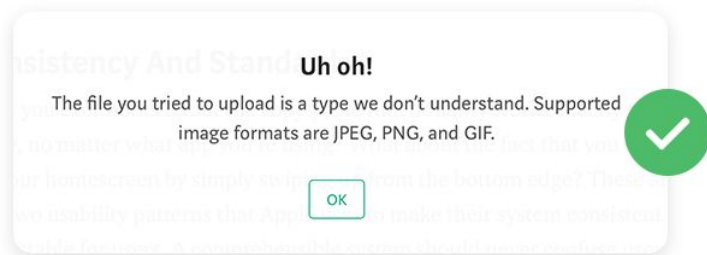
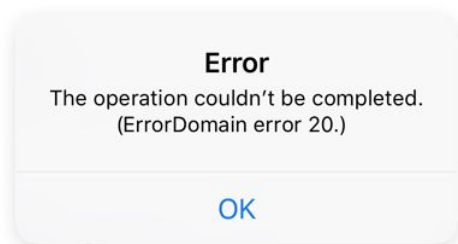
Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility.



Sky.

Help users recognize, diagnose, & recover from errors

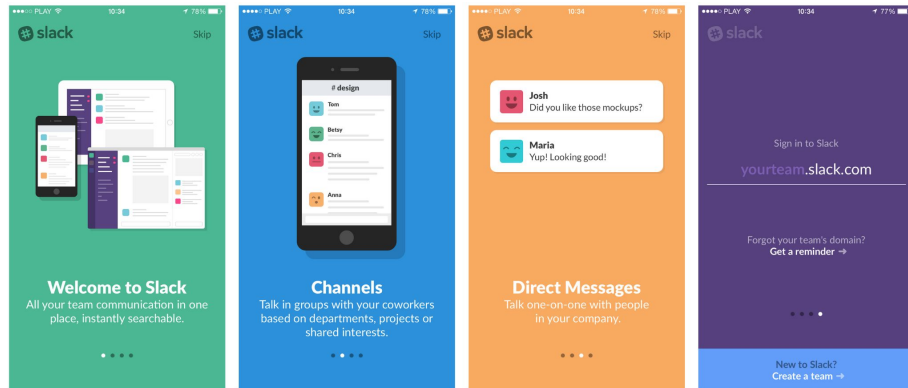
Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.



Help and documentation

It's best if the system doesn't need any additional explanation.

However, it may be necessary to provide documentation to help users understand how to complete their tasks.



Types of Cognition

1. Perception
2. Attention
3. Memory
4. Learning
5. Language
6. Thought



2. Attention

As technology allows people to do more tasks at the same time, the myth that we can multitask has never been stronger. But MIT researchers say it's still a myth — and they have the data to prove it.

Humans don't do lots of things simultaneously. Instead, we switch our attention from task to task extremely quickly.

John Hamilton, "Think You're Multi-tasking? Think Again," NPR, 2008.

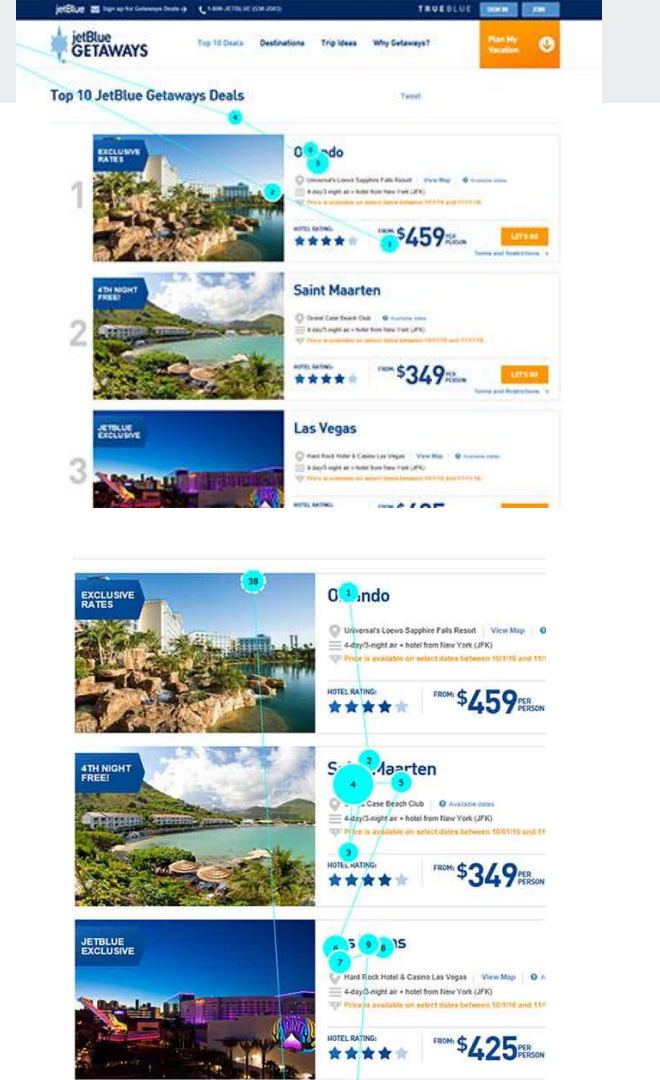
Selective Attention

Attention is Selective

People will pay attention to only one thing and ignore everything else as long as you give them specific instructions to do so, and the task doesn't take too long.

Selective Attention can be Unconscious

A person's unconscious constantly scans the environment for certain things. These include their own name as well as messages about food, sex, and danger.



Auto-Drive

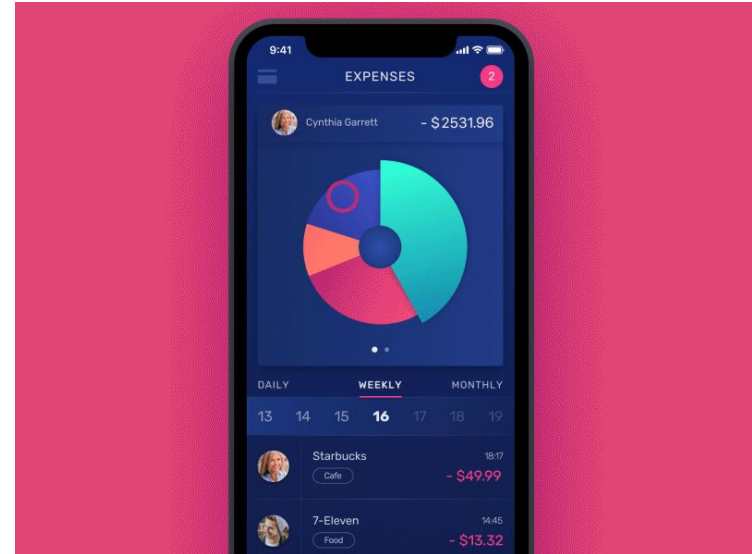
Well-Practiced Skills Don't Require Attention

If people perform a series of steps over and over, the action will become automatic.



Things that Get the Most Attention

1. Anything that moves
2. Pictures of human faces, especially if they are looking right at you
3. Pictures of food, sex, or danger (survival)
4. Stories
5. Loud noises





3. Memory

A filtering process is used to decide what information gets further processed and memorized.

The more attention that is paid to something and the more it is processed in terms of thinking about it and comparing it with other knowledge, the more it is likely to be remembered.



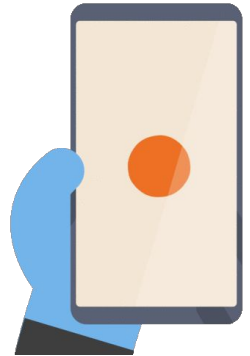
Emotion & Memory

Emotional responses make a profound imprint on our long-term memory. We generate emotion and record memories in the limbic system.

We would be doomed to repeat negative experiences and wouldn't have a life worth living if we couldn't remember our positive experiences.

From author John Medina of "Brain Rules,"

Emotionally charged events persist much longer in our memories and are recalled with greater accuracy than neutral memories. (The brain) uses dopamine the way an office assistant uses Post-It notes.





How Much Can We Remember at a Time?

Myth of Magic Number 7: Plus/Minus 2

Miller's Theory (1956) thought that people could only remember and process 5–9 things at a time. This has been proven wrong however in later studies.

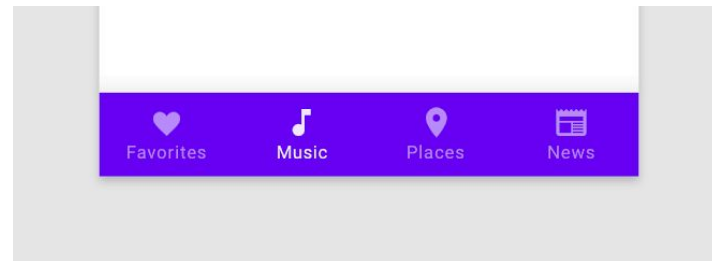
However with interface design, you aren't really having to remember your options. All items can be scanned and rescanned visually and therefore do not have to be recalled from short-term memory.

The New Magic Number is 4

For example:

phone numbers: 555-867-5309

small grocery list: *i need milk, eggs, bread, cheese*



Von Restorff Effect (aka Isolation Effect)

Predicts that when multiple similar objects are present, the one that differs from the rest is most likely to be remembered.

Choose the right Dropbox for you

☒ Billed yearly ☐ Billed monthly

Standard	BEST VALUE Advanced	Enterprise
\$12.50 / user / month, starting at 3 users	\$20 / user / month, starting at 3 users	Contact us
5 TB of space for secure storage - Easy-to-use sharing and collaboration tools	- As much space as your team needs - Sophisticated control and security features	- Customizable solutions - Individualized support to help admins manage at scale
Try free for 30 days or purchase now	Try free for 30 days or purchase now	Contact us
✓ 180 days of file recovery ✓ Single admin login to manage multiple	✓ Everything in Standard ✓ Advanced admin controls	✓ Everything in Advanced ✓ Centralized admin console to view

✗ The Mobile Spoon ✓

Your price:

\$1,200

No Thanks Buy

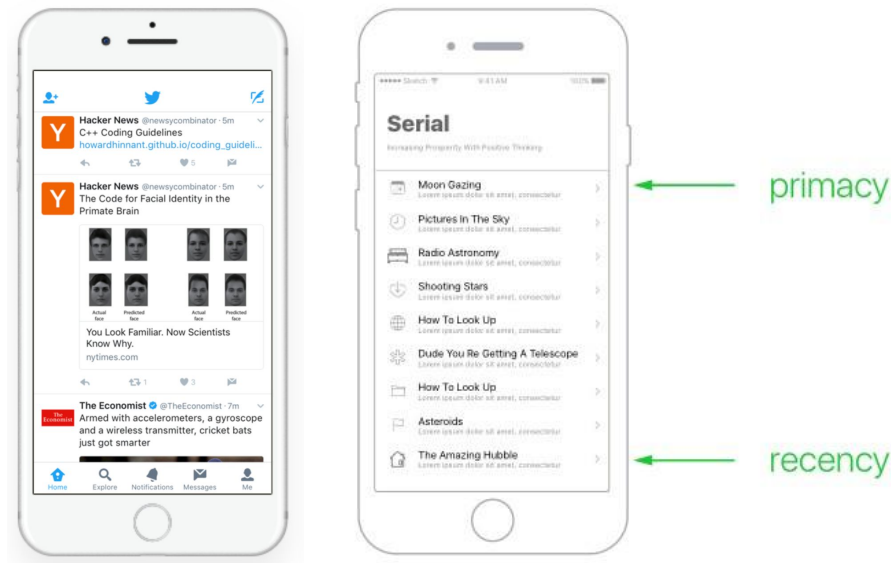
Your price:

\$1,200

No Thanks Buy

Serial Position Effect

The propensity of a user to best remember the first and last items in a series.





4. Learning

People find it very hard to learn by following a set of instructions in a manual. Instead, they prefer to learn by doing and by example.

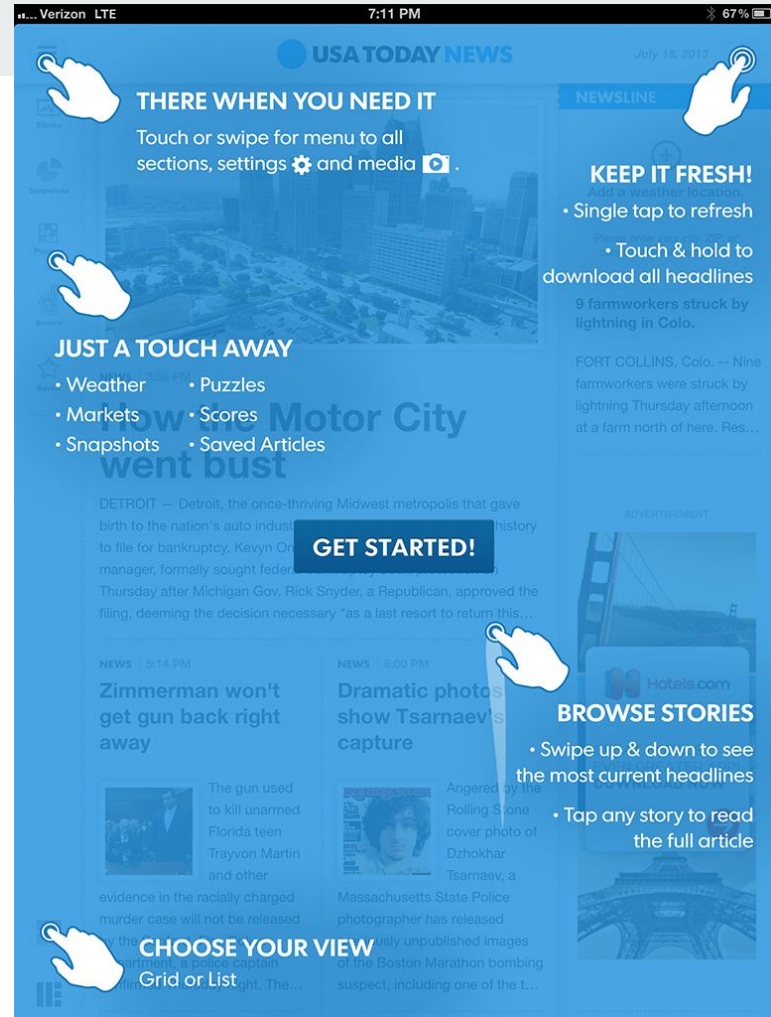
Don't just tell people what to do. Show them.

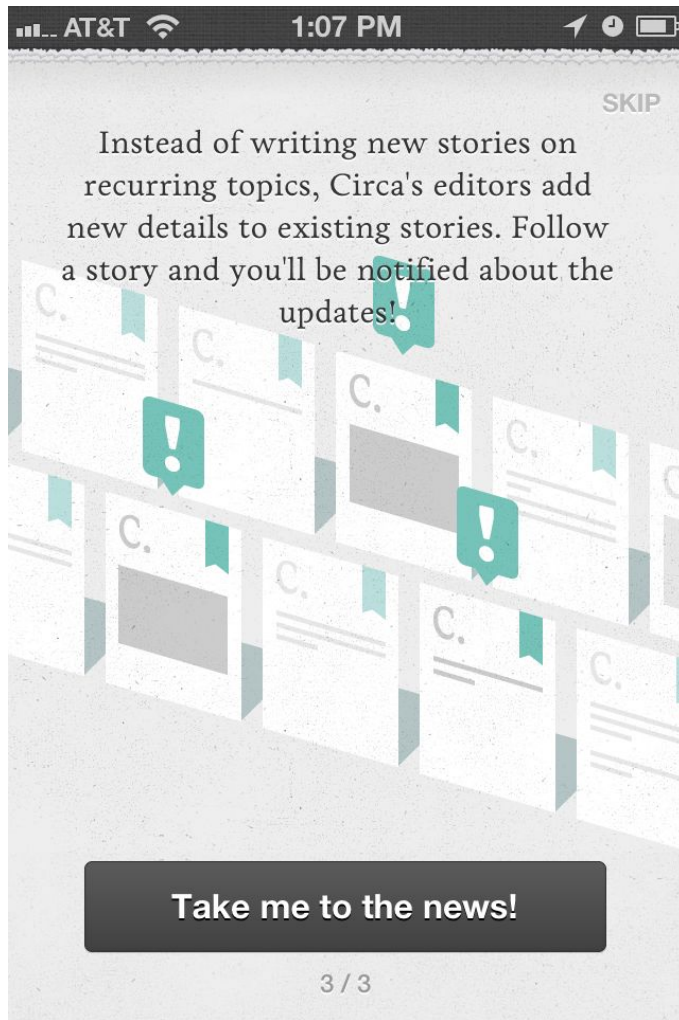
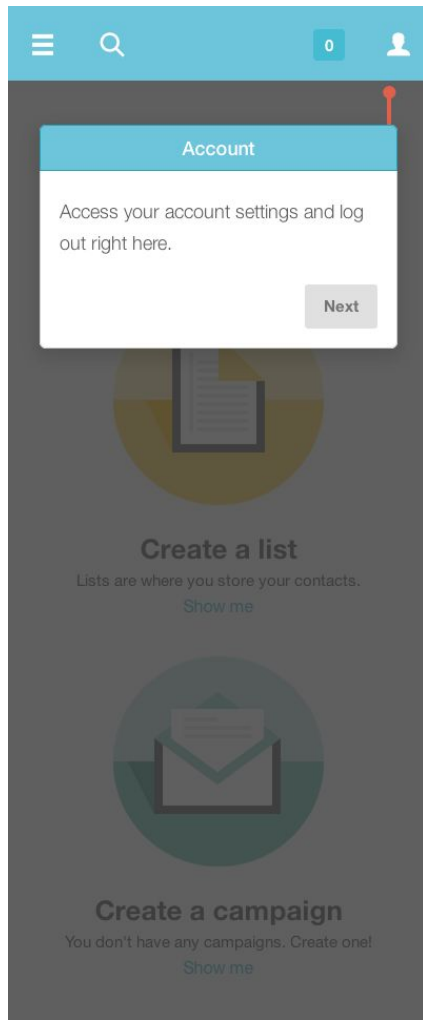
Implications

Design interfaces that **encourage exploration**.

Design interfaces that **constrain and guide** users to select appropriate actions when initially learning.

Link concrete representations and abstract concepts to facilitate the learning of complex material.





If you are trying to design to induce a Flow State:

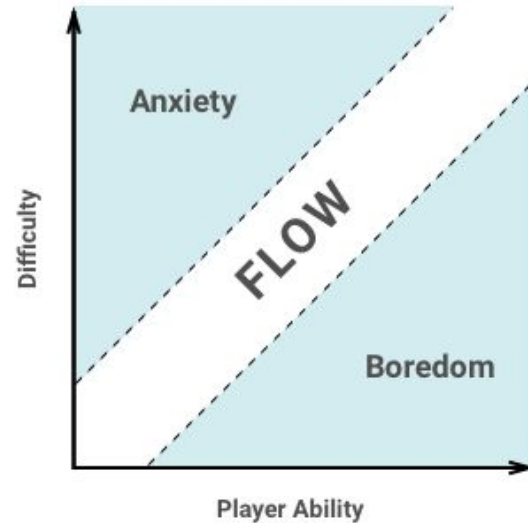
(for example, game design)

Give people **control** over their actions during the activity.

Break up the difficulty into stages. People need to feel that the current goal is **challenging, yet achievable**.

Give constant **feedback**.

Minimize distractions.



People Process Information Best in Story Form

Stories aren't just for fun. No matter how dry you think your information is, using stories will make it **understandable, interesting, and memorable.**

81% SAY THEIR TEAMWORK IS MORE EFFICIENT

"We manage too many people to constantly be searching for stuff"

In Twist, we waste less time and lose fewer conversations. Everyone loves that our team communication is finally organized and in one place.

Chelle CEO of Chelle Walsh Consulting

[Why Chelle Switched →](#)



78% SAY TEAM COMMUNICATION IS CALMER

"Twist shows more respect for my team's time and attention"

Switching from Slack was surprisingly easy. Collaborating in Twist is a lot less stressful because it's designed to help people do deep, focused work.

Richard Designer at Science

[Why Richard Switched →](#)



78% SAY THEY'RE MORE IN SYNC

"Now that we're using Twist, we're much more connected"

As a remote team, we're still tightly connected. Twist's focus on mindful team communication allows us to collaborate delightfully with ease and clarity.

Daniel President of Code Together

[Why Daniel Switched →](#)





5. Language

Reading, Speaking, and Listening

People have different preferences on how they want to learn through language.

Design systems sometimes allow users to access content through all 3 forms.

Processing Words

Words are processed in different parts of the brain depending on what you're doing with them. Viewing or reading words, listening, speaking, generating verbs – all of these word activities engage different parts of the brain.

People are active readers. What they understand and remember from what they read depends on their **previous experiences, their point of view while reading, and the instructions and title given beforehand.**

Words are processed in different parts of the brain depending on what you're doing with them. Viewing or reading words, listening, speaking, generating verbs—all of these word activities engage different parts of the brain, as shown in **Figure 14.3**.

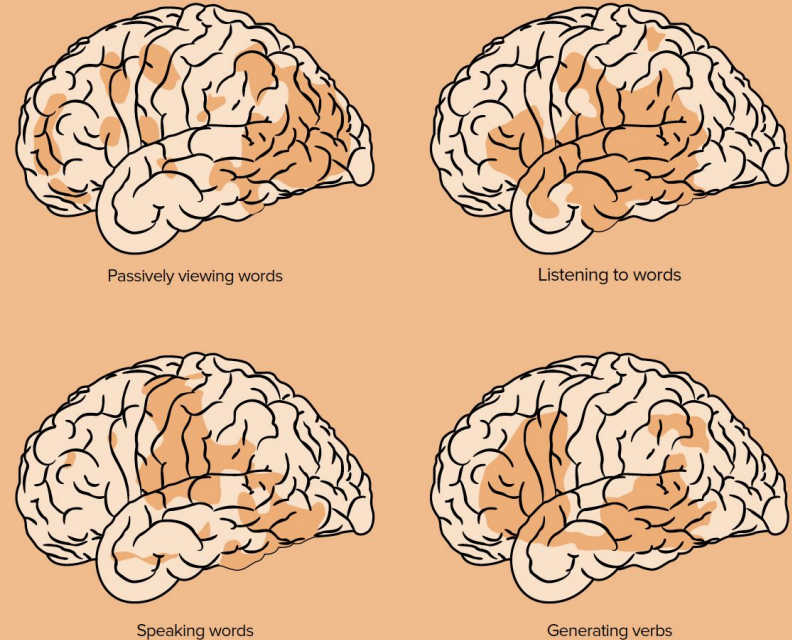


FIGURE 14.3 Different parts of the brain process words

How People Read Type

Serif and sans serif fonts are equal in terms of readability. If people have trouble reading the font, they will transfer that feeling of difficulty to the meaning of the text itself.

Choose a point size that is large enough for people of various ages to read comfortably on a screen. This can reduce eye strain. Consider using fonts with large x-height.

Break text into chunks and provide ample contrast between background and foreground.

People read faster with a longer line length.

We prefer a short line length

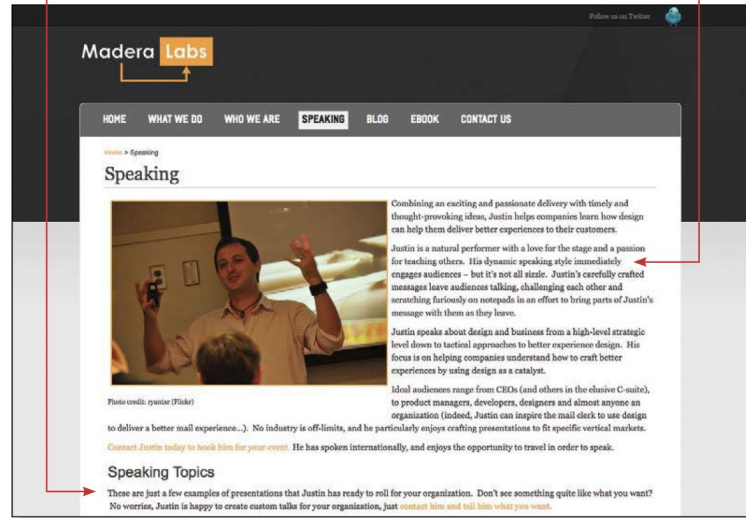


FIGURE 18.1 Line length, speed, and preference, www.maderalabs.com

Use longer line length if reading speed is an issue.
(100 characters/line)

Use a shorter line length if reading speed is less critical.
(45-72 characters/line)

Satisfy plus Suffice equals Satisfice

People will satisfice, that is, look for the good-enough solution rather than the optimal one.

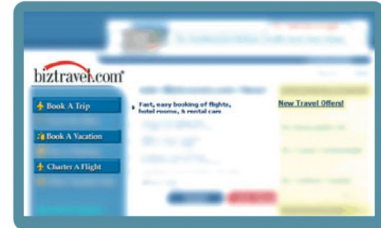
Most of the time people will just glance at your design, scan some of the text, and touch the first link that catches their interest or vaguely resembles the thing they're looking for.

It is kind of like **designing for billboards**, assuming people are taking a quick glance.

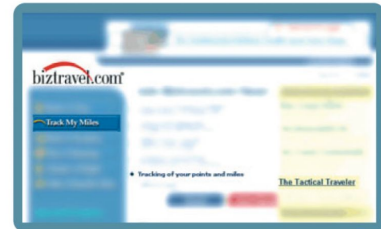
WHAT DESIGNERS BUILD...



WHAT USERS SEE...

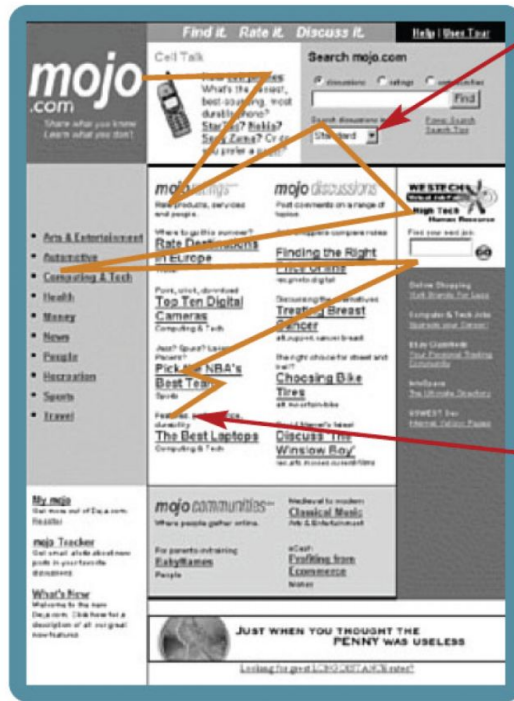
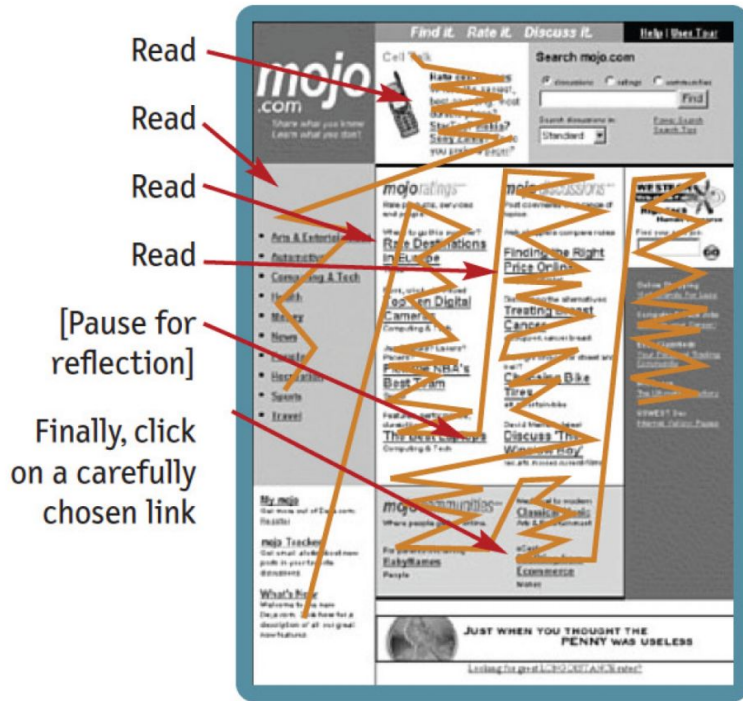


I want to buy a ticket.



How do I check my frequent flyer miles?

WHAT WE DESIGN FOR... THE REALITY...



Look around feverishly for anything that

a) is interesting,
or vaguely
resembles what
you're looking for,
and

b) is clickable.

As soon as you find a halfway-decent match, click.

If it doesn't pan out, click the Back button and try again.



6. Thought

Problem Solving, Planning, Reasoning, Decision Making

Human minds have evolved to act quickly, making just good enough decisions by using fast and frugal heuristics (*a.k.a. practical methods*).

We typically ignore most of the available information and rely on only a few important cues.

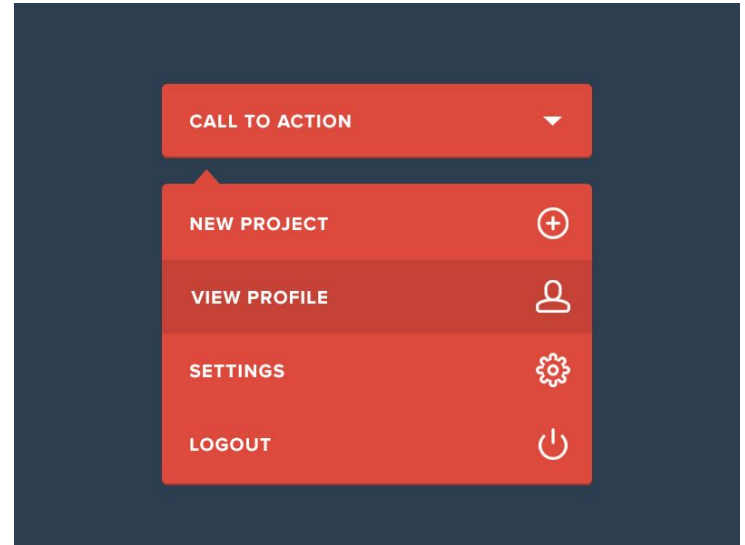


People Want More Choices Than They Can Process

Too many choices paralyzes the thought process.

Resist the impulse to provide customers with large number of choices, even if they want them.

If possible, **limit the number of choices to three or four**. If you have more to offer, then introduce in a progressive way.





Hick's Law

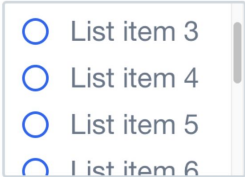
The time it takes for a person to make a decision depends on the choices available to them.

So if the number of choices increases, the time to make a decision increases logarithmically.

HARD

- ☐ List item 1
- ☐ List item 2
- ☐ List item 3
- ☐ List item 4
- ☐ List item 5
- ☐ List item 6
- ☐ List item 7
- ☐ List item 8
- ☐ List item 9

EASIER

- 
- ☐ List item 3
 - ☐ List item 4
 - ☐ List item 5
 - ☐ List item 6

EASIEST

- ☐ List item 3
- ☐ List item 4
- ☐ List item 5
- ☐ List item 6

Uncertainty in Decision-Making

People are very influenced by others' opinions and behaviors, especially when they are uncertain.

Use **testimonials, ratings, reviews** if you want to influence behavior.

The more information you provide in the rating and review about the person who left it, the more influential the rating or review will be.

Streamlining Internal Processes: Saving You Time and Money

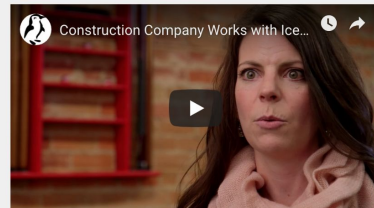
"Initially we thought our website was going to be just to validate us as a company. But what it did actually was save a bunch of time by implementing different tools that we didn't even know we could use a website for."



FREE WEBSITE REVIEW

Taking Your Ideas, And Making Them Perfect For You.

"When you choose Iceberg you get a wonderful, professional team with innovative ideas, awesome customer service, and exactly what you're looking for. Iceberg took the ideas that we had and put them perfectly on the web."



CALL TODAY!



People Think Choice Equals Control

People need to feel that they are in control and that they have choices.

People won't always choose the fastest way to complete a task, so provide them alternate methods of completing it.

They are also motivated by **mastery and progress**. Look for ways to help people set goals and track them.

People like to do things themselves, and are motivated to do so. If you want to increase **self-service**, make sure your message is about having control and being able to do it yourself.

2019 TAXES
\$0.00
2019 BALANCE DUE

Free 2019

My Returns
My Info
Auto-Fill My Return
Income
RRSPs
Deductions
Provincial
Review
File

Bookmark
Find
Help

Let's make sure we didn't miss anything

Intro

Income

RRSPs

Deductions

Provincial

Review

File

We're ready to do a final review to make sure your tax return is complete. We'll also try to find you some more money with a list of tax saving opportunities.

Back
Continue

Good

Not so good

Don't ask

We get it. The tax code is pretty crazy. But we're used to rolling up our sleeves and making taxes less, well, taxing.

6
So far so good! Let's keep getting ready for this year's taxes.

Need to do something else?

Continue

You did it! You just e-filed your taxes.

A confirmation email celebrating your success is on its way.

We truly appreciated the opportunity to help you with your taxes.

You filed on February 29, 2016 @ 12:26 PM EST

How likely are you to recommend TurboTax to a friend?

Not very likely

0
1
2
3
4
5
6
7
8
9
10

Extremely likely

Continue



Goal-Gradient Effect

The shorter the distance to a goal, the more motivated people are to reach it. People are even more motivated when the end is in sight.

People enjoy being part of a [reward program](#).

Motivation and purchases plummet right after the goal is reached.

For it to work, the reward must be something that people want.

Also, think about the pattern of behavior you want and adjust the reward schedule to fit that. Use a [variable ratio schedule](#) for maximum behavior repetition.

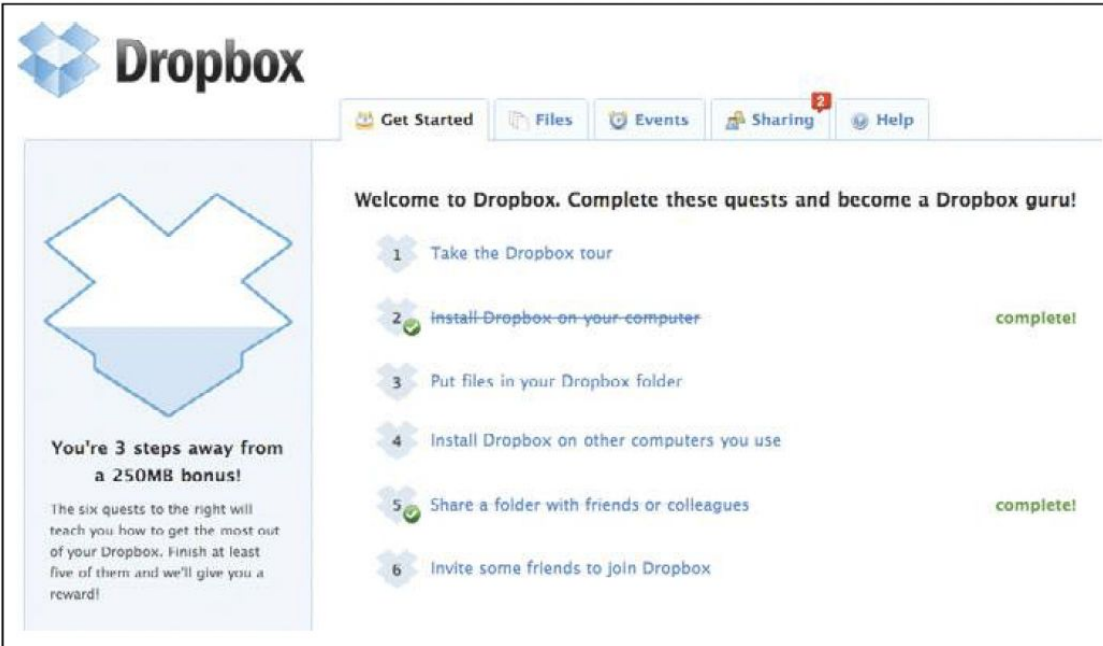
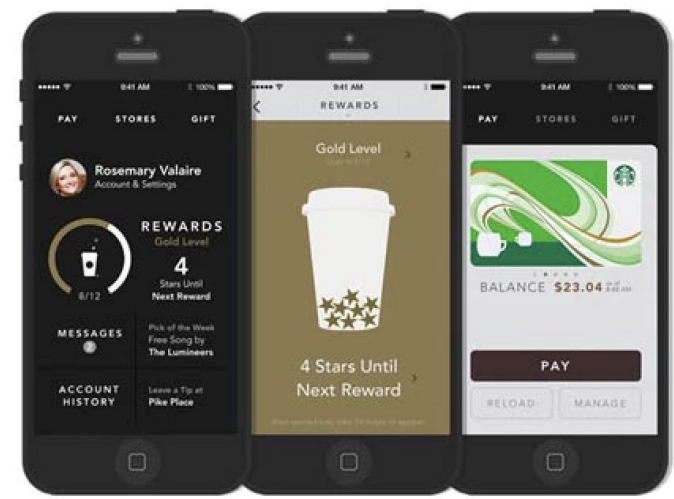


FIGURE 50.1 Dropbox shows you how close you are to the goal





The Zeigarnik Effect

People are more likely to remember something that is unfinished or incomplete.

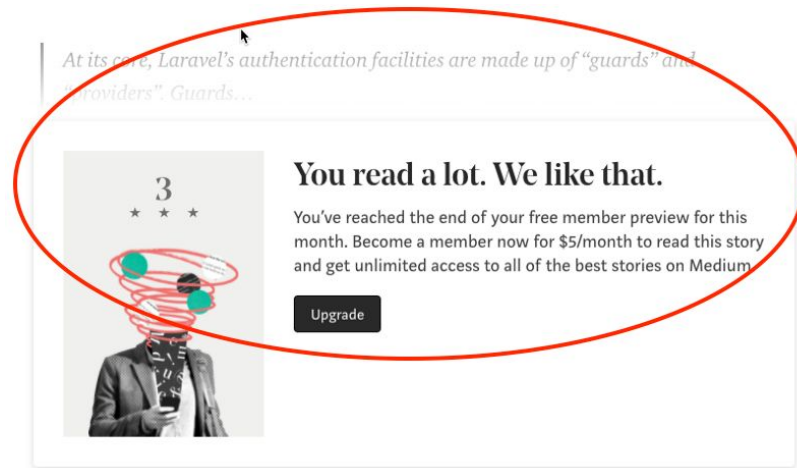
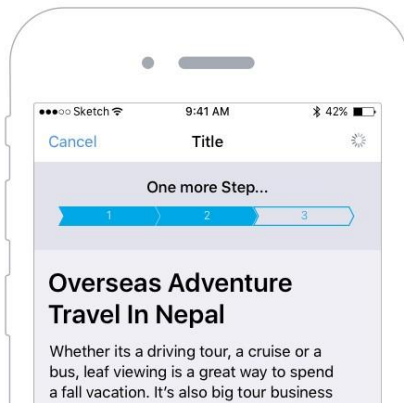
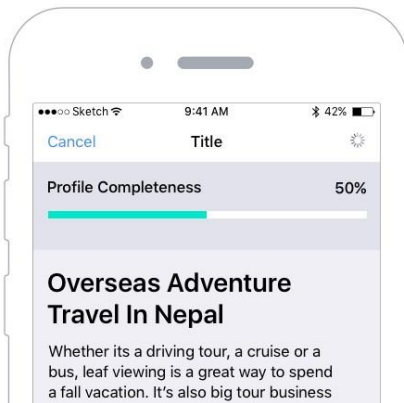
Also known as the cliffhanger effect. It is used in media as a form of marketing.

For example, many crime dramas will often leave you hanging, so you will tune in next week or binge-watch.

This tactic is employed to drive users around an app, as well as invite them to come back.

For example, offering RSS feeds gives a very quick summary of new content appearing on a site.

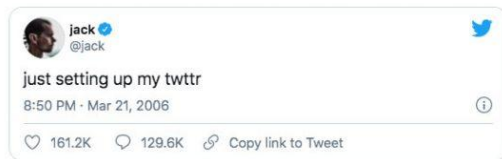
Updates to an iPhone app can drive users back to a product. When an article is finished, it could offer links to similar articles.



Dopamine makes people addicted to seeking info

Dopamine causes you to want, desire, seek out, and search.

The easier you make it for people to find information, the more information-seeking behavior they will engage in.



Pairing cues such as **sounds** with the arrival of information motivates people to seek more. (*texts*)

Giving **small bits of information** and then providing a way for people to get more information results in more information-seeking behavior. (*Twitter*)

The more **unpredictable** the arrival of information is, the more people will be addicted to seeking it. (*slots*)



Habit-Forming Takes Awhile

Give people a **small, easy task** to do, rather than a complex one.

Give people a **reason to come back** and do the task every day.

Be patient. Creating habit may take a long time.

Average time it takes people to form a habit is 66 days.

Some behaviors take longer than others, **for example**, *an exercise habit takes one-and-a-half times longer to form than something simple like eating fruit for lunch.*

Profile English Shop

Basics 1

Phrases 0/3 Basics 2 0/4

Food 0/5 Animals 0/4 Plurals 0/1

Possessives

Practice Weak Skills

Quit

Translate this sentence

La niña come una manzana.

Type in English

Check

Lesson Complete! +10 XP
Heart bonus! +3 XP

1060 XP

F Sa Su M Tu W Th

You're on a 10 day streak.

Set a goal

Continue

Profile

ankita gupta
ankitagupt756710

Achievements

Champion
LEVEL 5 CLAIM REWARD

Wildfire
Reach a 50 day streak
LEVEL 5 31/50

Sage
Earn 4000 XP
LEVEL 6 2.9K/4K

View 10 more

112 French Practice

You've conquered the French skill tree!

First of all, you're awesome! You've completed the French skill tree! Second of all, we'd like to take this time to thank you sincerely for your lengthy participation on Duolingo. So in honor of you, here is a very special trophy in which to show our gratitude.

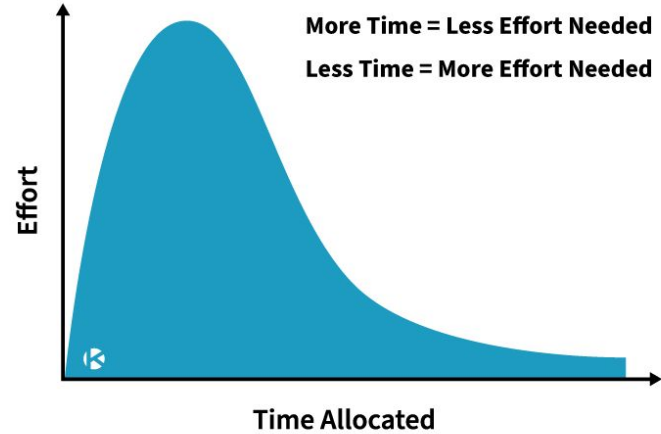
But don't stop now, maintain your knowledge and keep your word strength full by continuing to practice.

Home Profile Store Labs

Parkinson's Law

Any task will inflate until all of the available time is spent.

Parkinson's Law



1 mart

- 1 Martin Place Sydney, New South Wales, Australia
- 1 Martin Street St Leonards, New South Wales, Australia
- 1 Martin Place Mortdale, New South Wales, Australia
- 1 Martin Street Haberfield, New South Wales, Australia
- 1 Martins Avenue Bondi, New South Wales, Australia



Baby Duck Syndrome

This is a tendency for users to 'imprint' on the design they first encounter and stick with it.

This is best seen when an application is redesigned. People are resistant to change and love the familiar. They tend to judge other designs based on what they already know.

For example, Apple OS users will exclaim all that is 'wrong' with Windows OS because it is unfamiliar to them, and vice versa.

When redesigning an application one must consider the reactions of the user-base and try to find ways to limit backlash.
(introduce incrementally)

EVOLUTION OF INSTAGRAM

2010



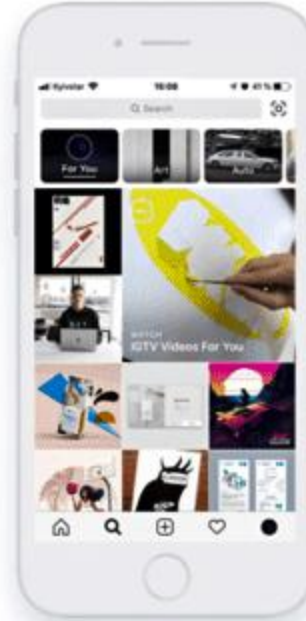
2013



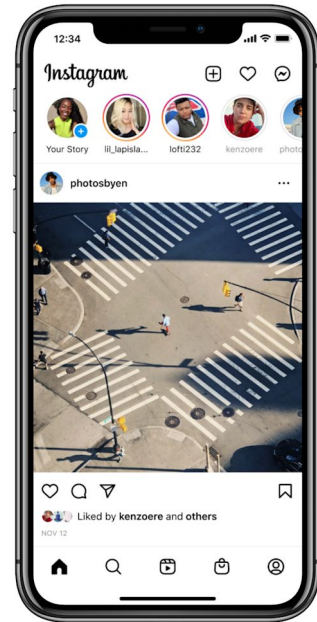
2015



2018



2021



Peak-End Rule

People judge an experience largely based on how they felt at its peak and at its end, rather than the total sum or average of every moment of the experience.

