



Academic Year	Module	Assessment Number	Assessment Type
S21	Human Computer Interaction (5CS020)	A1	Individual Report

[Usability of website design]

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Abstract

The ever-increasing use of the internet has turned the whole world into a virtual marketplace. Users have been more concerned with the dependability of many web applications. Because of the rapid growth of web applications accessible on the internet, user interface designers are being forced to become more competitively innovative. Users want websites to provide them with a good experience at the very least. Numerous research studies based on the design of usability heuristics to test websites have been performed. However, few studies use a methodology that will potentially give the findings of usability testing a deeper sense. Without considering the relationships between usability metrics and calculating the usability index, usability assessment can be meaningless. According to the findings of the literature review, there is no specific usability index that can be used to assess the usability of websites. This usability index is a key metric for assessing the management effect of usability evaluation performance. As a consequence, this paper aims to highlight potential research directions in the field of web usability measurements that will result in a useful standard score for all usability metrics.

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Introduction

The world of Computing contains 3D printers which can print other 3D printers, virtual and augmented reality software that can transport users to new worlds, and voice-controlled devices that can provide weather and traffic updates.

Human-Computer Interaction is mainly focused on developing features and designing based on an understanding of users. HCI is the study of designing computer and machines that can serve the user better. Some of the HCI inventions are virtual reality, self-driving cars, and touch screen technology. This field has developed skillfully since the starting point of activities. It is supportive and enjoyable to use for human development. (getsmarter, 2019)

Usability

Usability is a metric that assesses how well a particular consumer in a specific situation can use a product/design to accomplish a given purpose effectively, efficiently, and satisfactorily. To ensure optimal usability, designers typically evaluate a design's usability during the development phase, from wireframes to the final deliverable (for example, an alarm clock or a toaster).

According to “David McQuillen“ the ex-Swiss banker and founder of Sufferfest cycling workout resources, “*Usability is about human behaviour. It recognizes that humans are lazy, get emotional, are not interested in putting a lot of effort into, say, getting a credit card and generally prefer things that are easy to do vs. those that are hard to do.*” (Interaction Design Foundation, n.d.)

Importance of Usability

Usability is a part of user experience (UX) design. The second level of the user interface is usability. It follows utility and is preceded by desirability and brand experience. So, once you've established that your product can solve users' problems, you'll need to consider its usability. A design's usability is measured by how well its features accommodate the needs and contexts of its users. As a consequence, you are responsible for the usability of your design, which should include the elements mentioned below.

- Effective

Effectiveness allows users to achieve their goals in completing action accuracy.

- Efficiency

Users can complete the task easily by following the simplest procedure and spending less time managing information. It also follows a logical sequence and doesn't waste resources.

- Engagement

Users find it easy to use and suitable for the industry/topic.

- Error Tolerance

It supports a variety of user behaviours and only displays an error when something is truly wrong which is accomplished by determining the number, type, and severity of common user errors, as well as the ease. The users can recover from those errors.

- Effort of learning

New users can get satisfied by achieving their goal easily, and enjoying their experience and achieve goals more easily on future visits. (Interaction Design Foundation, n.d.)

Literature Review

Related Work

Boosted usa

Boosted usa is an e-commerce website that allows a business to function almost entirely online, obviating the need for a home office with sales and management personnel. The method is completely automated, which sets it apart from other websites that also emphasize business growth. The time investment in shopping is much smaller. user can look at a variety of sizes and choices in a matter of minutes without having to travel from one location to another. There is a greater variety of items, particularly when searching for a specific brand, size, colour, or feature. Before making any final decisions, users can read consumer feedback on blogs and websites. More and more stores are allowing free returns if a product does not suit properly or meet the requirements they claimed online, which is becoming a growing trend.

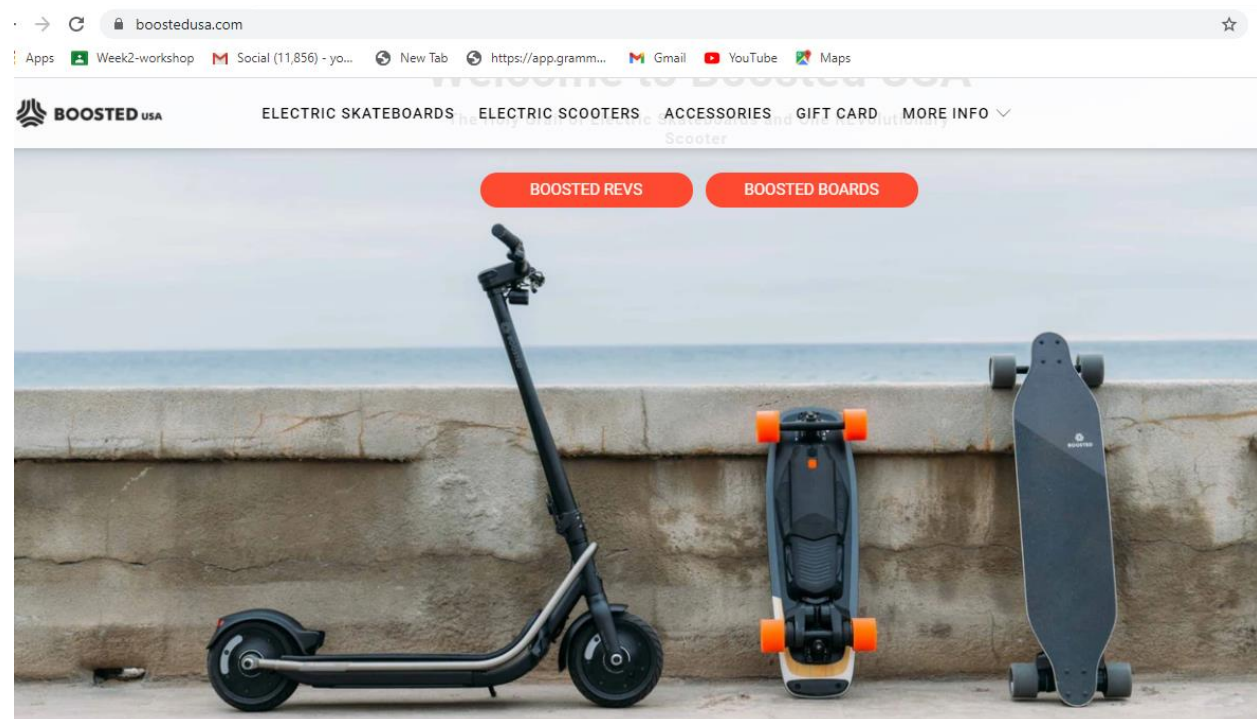


Figure 1: Homepage

Boosted usa follows certain golden rules and Jacob's rule which makes it easy to use by the user and be a successful website. It also gives security to the users to make the user's satisfied. The user can log in to this page manually with email and password, choose the products and buy products using online payment just by sitting home.

Dropbox

When you're working in a group, finding the right file is just the start of a long and arduous war. Teams are collaborating more than ever before to solve increasingly difficult problems. Team members are dispersed around cities, and content discussions tend to be disjointed. Solving issues as a group can be very rewarding, but the process of working together can be difficult.

Dropbox's recent redesign reflects the company's awareness of the context around file sharing and team play in general. The most recent site redesign, which prioritizes team-first functionality, would support users. For years, I've stored my files and photos on Dropbox. My team has just recently started using Dropbox as a means of collaboration.

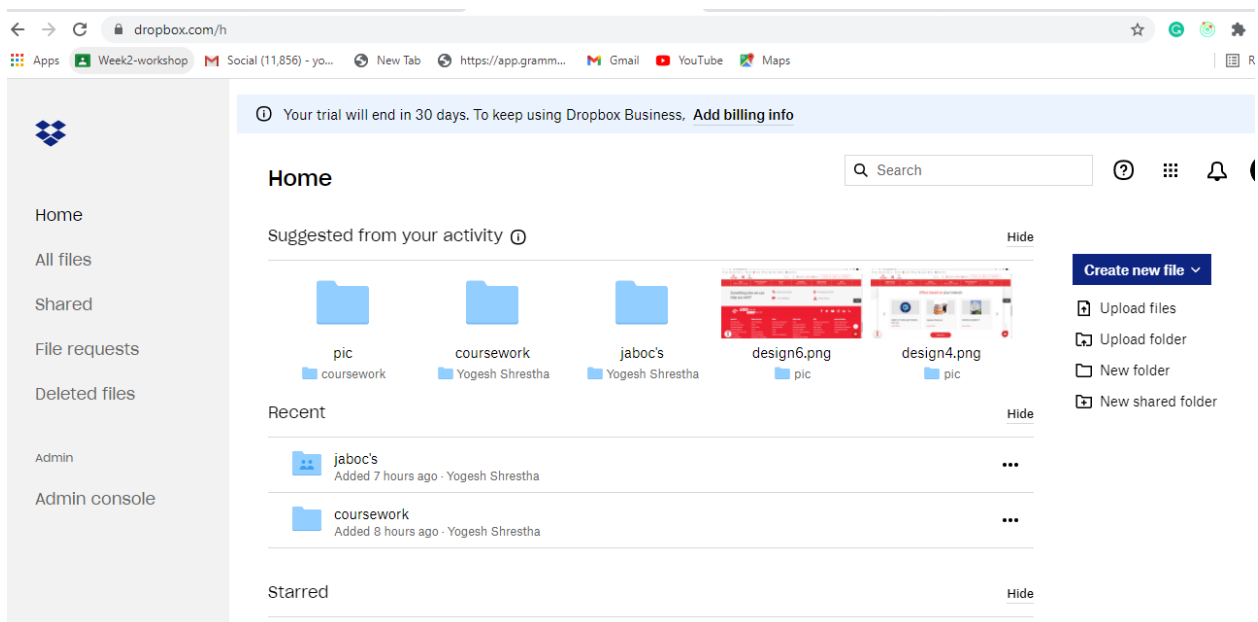


Figure 2: Homepage after login

Dropbox contains with smart workspace. It can do more than storing file and folder. It is used by industry for education, construction, retail, technology and other purposes. It can be also used by family, freelancers, teams, enterprise. The user uses dropbox to share files, auto-sync. Many users are engaged in dropbox because it stores file and give backup, makes secure and protects, which makes users more productive.

Web usability

The website will be successful when the user does not face any difficulties during the navigation of sites. Users should be able to achieve goals with effectiveness, efficiency and satisfaction in a specified context of use. The user could work on a site for long with comfort and enjoyment. Website running process like navigating and searching text/images should be easy. It is necessary for the user how easy or difficult it is to use a site and to work on it. Online usability is determined by some important factors, such as how easy it is to search for different parts of a website. Users need to be able to navigate and search for the information they need. (Arthana, 2019)

Usable security

A security system that improves while taking into consideration how consumers interact with the system is known as usable security. Usability and security are both important which are interrelated to one another. Usability and security are a concept of multidimensional which creates usability and security a challenging task. It is determined with interconnection factors at the individual and organization level. In a model, website security, website quality, satisfaction, and learnability are merged into one framework.

Usability and security evaluation model E-commerce

In the past, a large number of studies used the "Technology Acceptance Model" to assess the usability and protection of E-commerce websites (TAM). Tam is chosen as a research model for the adoption of E-commerce which measures how user-friendly an interface is and use an interface is. Since TAM has unclear determinants, the relationship between several website usabilityes and e-commerce variables, including design, perceived danger, intention to complete a transaction, and trust, was investigated. [35] and [36] used a definition similar to the "Direct Impact Model" to identify the factors that influence e-commerce usability. This model safely measures the enjoyment, user-friendliness of the website. The findings show that device efficiency, service quality, confidence, and privacy are all directly linked to customer satisfaction. (Nur Azimah bt Mohd, 2019)

Scanning

Users are more likely to browse a document before they find something that catches their interest. It usually depends on the user's target on the website. It is important for web designers to be aware

of this and to change their user interfaces to account for such behaviour. Visitors simply search the headings and photos for something familiar or interesting to click on. As a consequence, it's important to adhere to the conventions that tourists are used to. It's a big deal if tourists can use anything instantly because it looks like something they've seen before. Everyone has learned how to do some things throughout their lives, such as reading a newspaper, running a printer, driving a vehicle, withdrawing money from an ATM, and so on. People are unable to forget what they have already heard and they cannot return to their previous state of ignorance. (Krejcar, 2016)

Methodology

Evaluation of an Existing System's Usability

This process aims to assess the website's usability. Effectiveness, performance, and satisfaction are the characteristics that are used. The mission scenario is used to assess effectiveness and performance. User has to sign up and log in to do work or business on this website. User should read the terms and conditions of the website. If the user wants to buy products from the website then, the user should have a valid address and payment method to get satisfied. On the drop box website, the user can upload and share files more over the user can also delete the file or recycle it. This website can guide the user to use it in proper ways with the help of a FAQ or help centre. Reduces user's short-term memory load by showing the list of products that are added to cart or showing recently uploaded files.

The Development of Wireframe as Alternative Design

Wireframe development based on the first phase's evaluation results. Shneiderman's Eight Golden Rules are also used to make suggestions for change. This process creates a wireframe for the Website as an alternative design.

Analysis

Goldens rules

Every day, designers must solve problems, and finding the best solution necessitates detailed analysis and careful testing. Every day, designers must solve problems, and finding the best solution necessitates detailed analysis and careful testing. It would be great if there was a secret formula that solves problem issues of interface designing automatically. We might not have a formula but we are aware of certain shortcuts that we can use on necessary.

Designing the User Interface, by Ben Shneiderman, is one of the best books on interaction development, and it reveals his own set of concepts known as the "Eight Golden Rules of Interface Design." Now we'll take a look at these laws.

1. Strive for Consistency

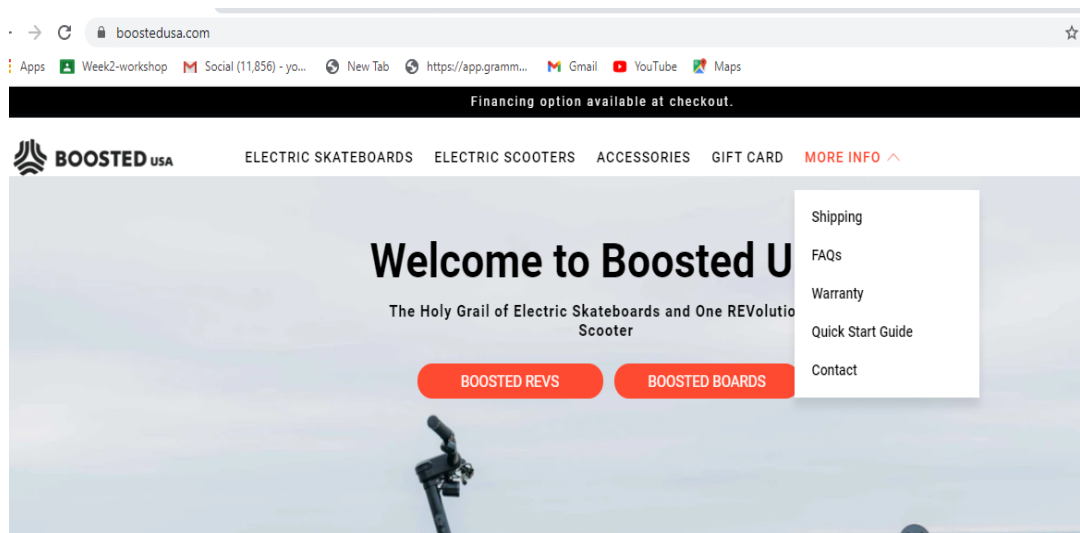


Figure 3

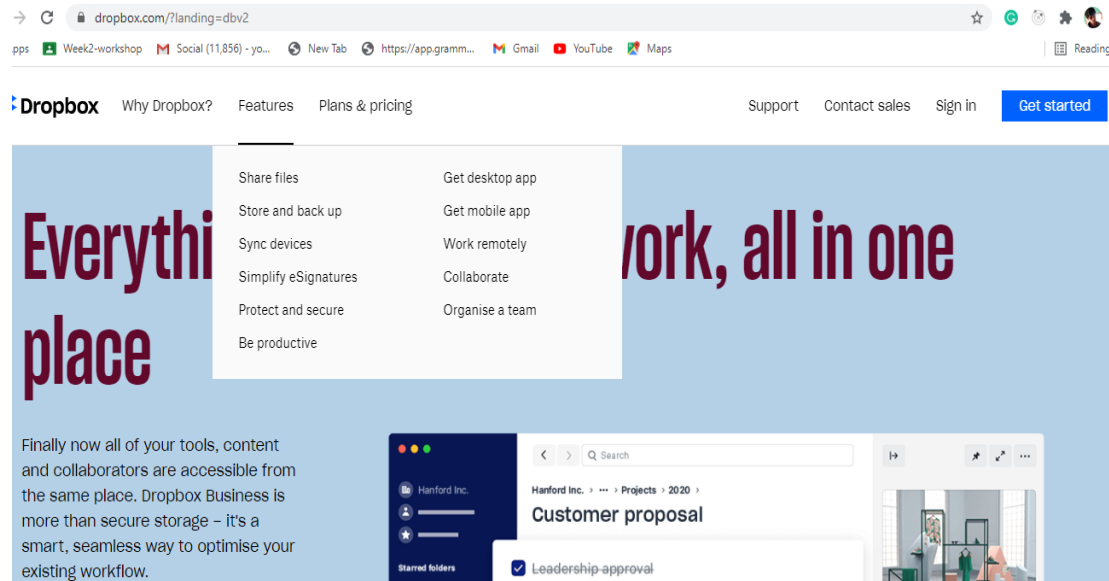


Figure 4

- Both products contained navigational elements.
- Both products tried and tested UI patterns with drop-down menu

2. Enable Frequent Users to User Shortcuts

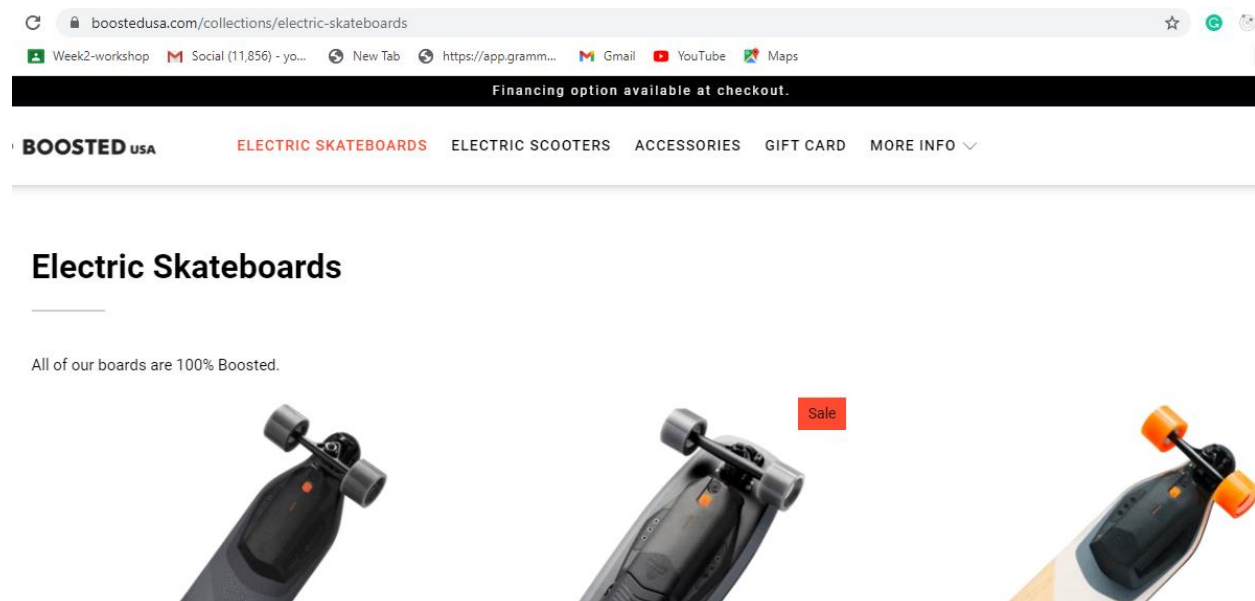
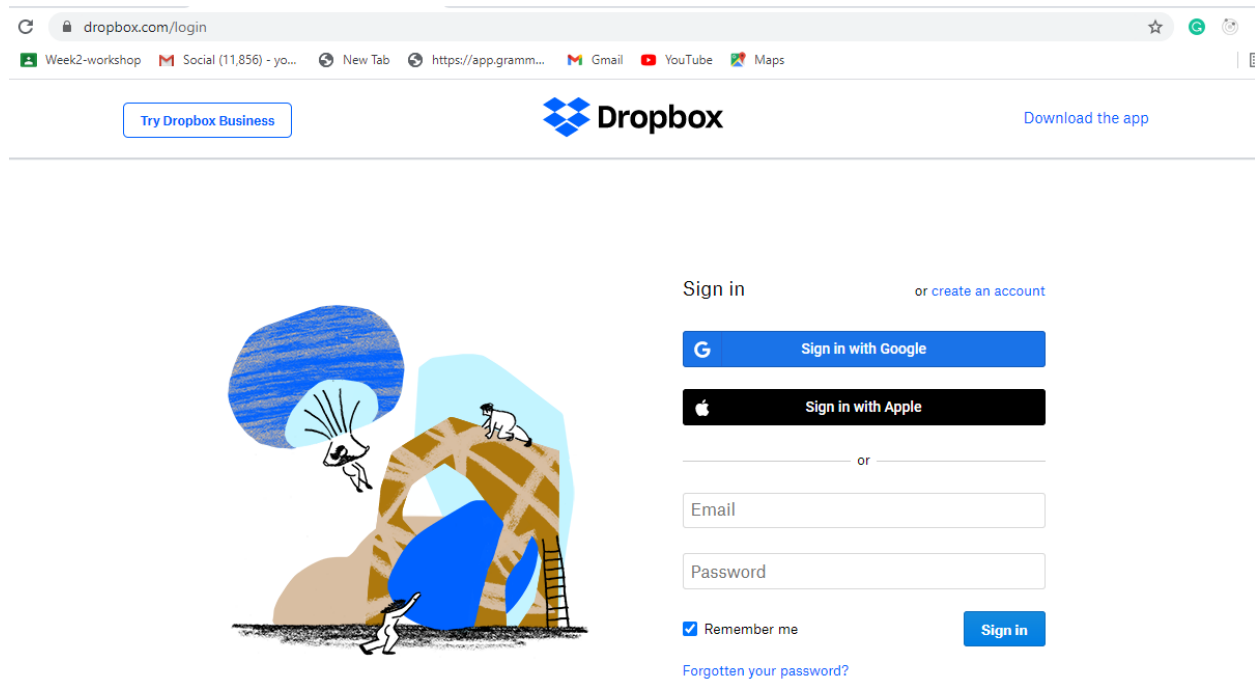


Figure 5

- Absence of breadcrumb and search.
- Do not remember the last visited products.



dropbox.com/login

Week2-workshop Social (11,856) - yo... New Tab https://app.gramm... Gmail YouTube Maps

Try Dropbox Business

Dropbox

Download the app

Sign in or [create an account](#)

[Sign in with Google](#)

[Sign in with Apple](#)

or

Email

Password

☒ Remember me [Sign in](#)

[Forgotten your password?](#)

Figure 6

- User can sign in directly through google and remember the user.
 - Do not remember the last visited page.
3. Offer Informative Feedback

The screenshot shows a web browser window with the URL `boostedusa.com/26814546031/checkouts/3c298254d3d1f9325a273c0e69a53a43`. The browser's address bar and tabs are visible at the top. The main content area is a checkout form. On the right side of the form, there is a grey vertical bar with the word "Total" at the top. The form fields on the left are: "Company (optional)", "Address" (with a red border and the text "Enter an address" below it), "Apartment, suite, etc. (optional)", "City" (with a red border and the text "Enter a city" below it), "Country/Region" (a dropdown menu showing "United States"), "State" (a dropdown menu with the text "Select a state / province" below it), "ZIP code" (with the text "Enter a ZIP / postal code" below it), and "Phone" (with a red border and the text "Enter a valid phone number" below it). At the bottom of the form, there is a black button with a white circular arrow icon and the text "Return to cart" to its right.

Figure 7

- Do not display “please wait for” message but display animated pictures when the website is “doing something”
- Do not show informative feedback

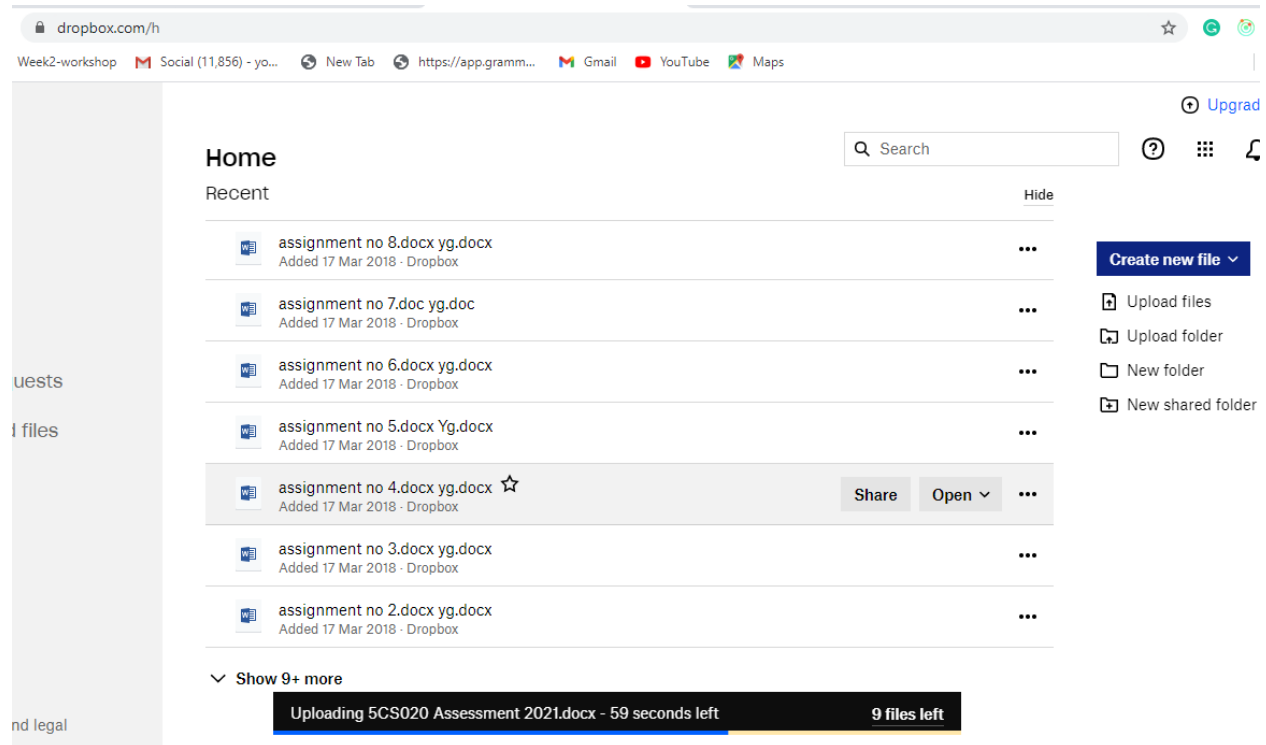
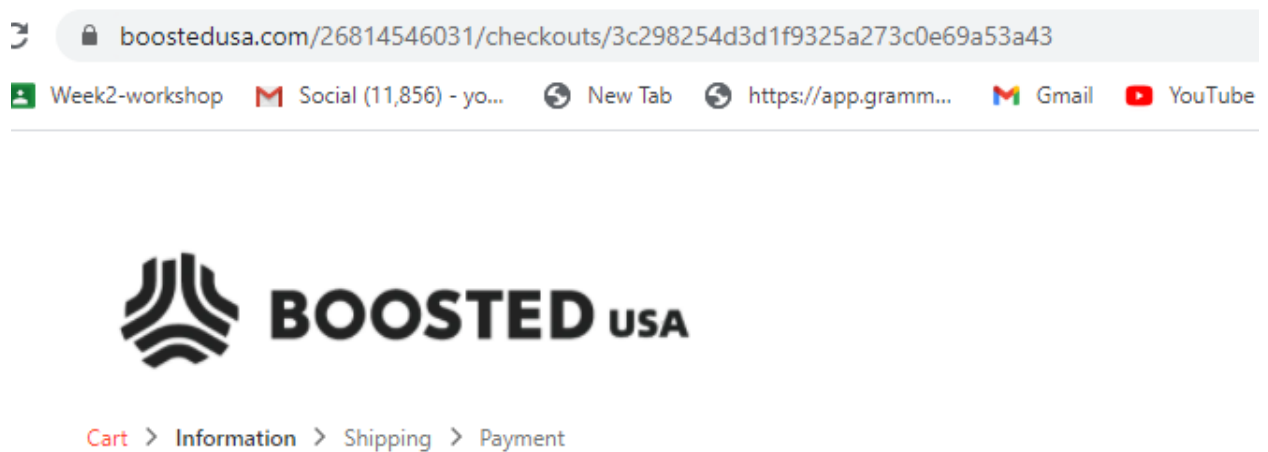


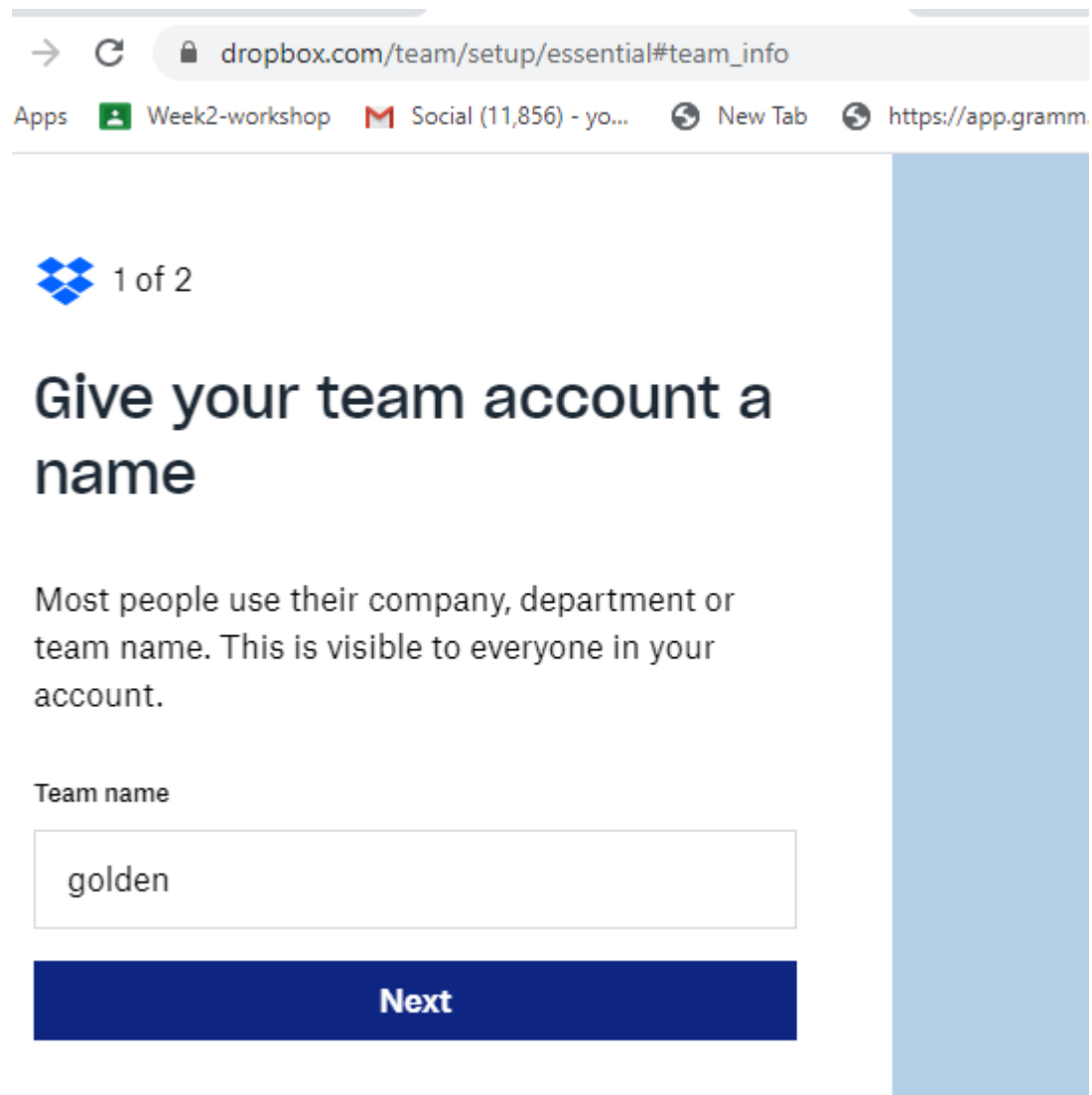
Figure 8

- Shows animated loading and informative feedback like “successfully uploaded”.

4. Design Dialog to Yield Closure



- Shows buyer’s current ‘position’.
- Do not display features of goals to reach.



The screenshot shows a web browser window with the address bar displaying 'dropbox.com/team/setup/essential#team_info'. The browser's tab bar shows several tabs: 'Apps', 'Week2-workshop', 'Social (11,856) - yo...', 'New Tab', and 'https://app.gramm...'. The main content area of the browser shows the Dropbox team setup interface. It features the Dropbox logo and '1 of 2' indicating the current step. The heading 'Give your team account a name' is prominently displayed. Below this, a paragraph explains that the team name is visible to everyone in the account. A text input field labeled 'Team name' contains the word 'golden'. At the bottom of the form is a large blue button labeled 'Next'.

Figure 9

- Shows current positions and destinations.
- Do not guide the user through creating an account process with a diagram or showing a sequence of steps.

5. Offer Simple Error Handling

boostedusa.com/26814546031/checkouts/3c298254d3d1f9325a273c0e69a53a43

Week2-workshop Social (11,856) - yo... New Tab https://app.gramm... Gmail YouTube Maps

Company (optional)

Address

Enter an address

Apartment, suite, etc. (optional)

City

Enter a city

Country/Region United States State ZIP code

Select a state / province Enter a ZIP / postal code

Phone

Enter a valid phone number

Total

Figure 10

- Guide properly if an error occurs.

dropbox.com/login?cont=https%3A%2F%2Fwww.dropbox.com%2Fh

Week2-workshop Social (11,856) - yo... New Tab https://app.gramm... Gmail YouTube Maps

Try Dropbox Business

Dropbox

Download the app

Sign in with Apple

or

y3

...

☒ Remember me

Sign in

Forgotten your password?

Figure 11

- Do not guide if an error occurs.

6. Permit Easy Reversal of Actions

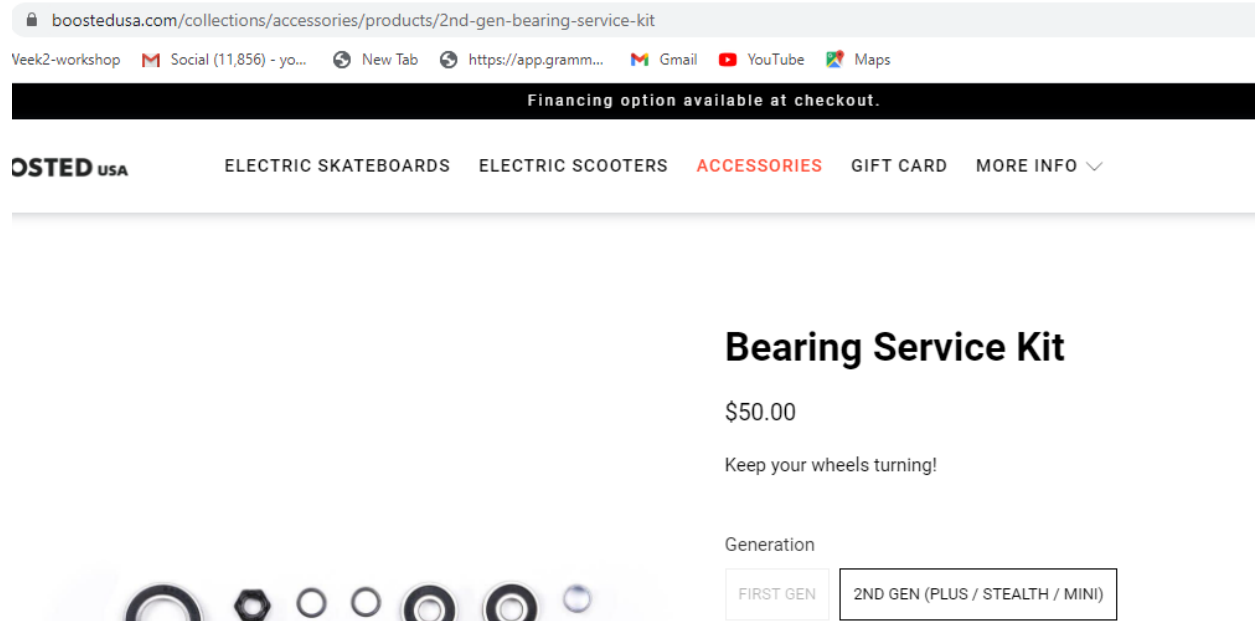


Figure 12

- The navigation structure is not incorporated in this site, ‘reversal of action’.

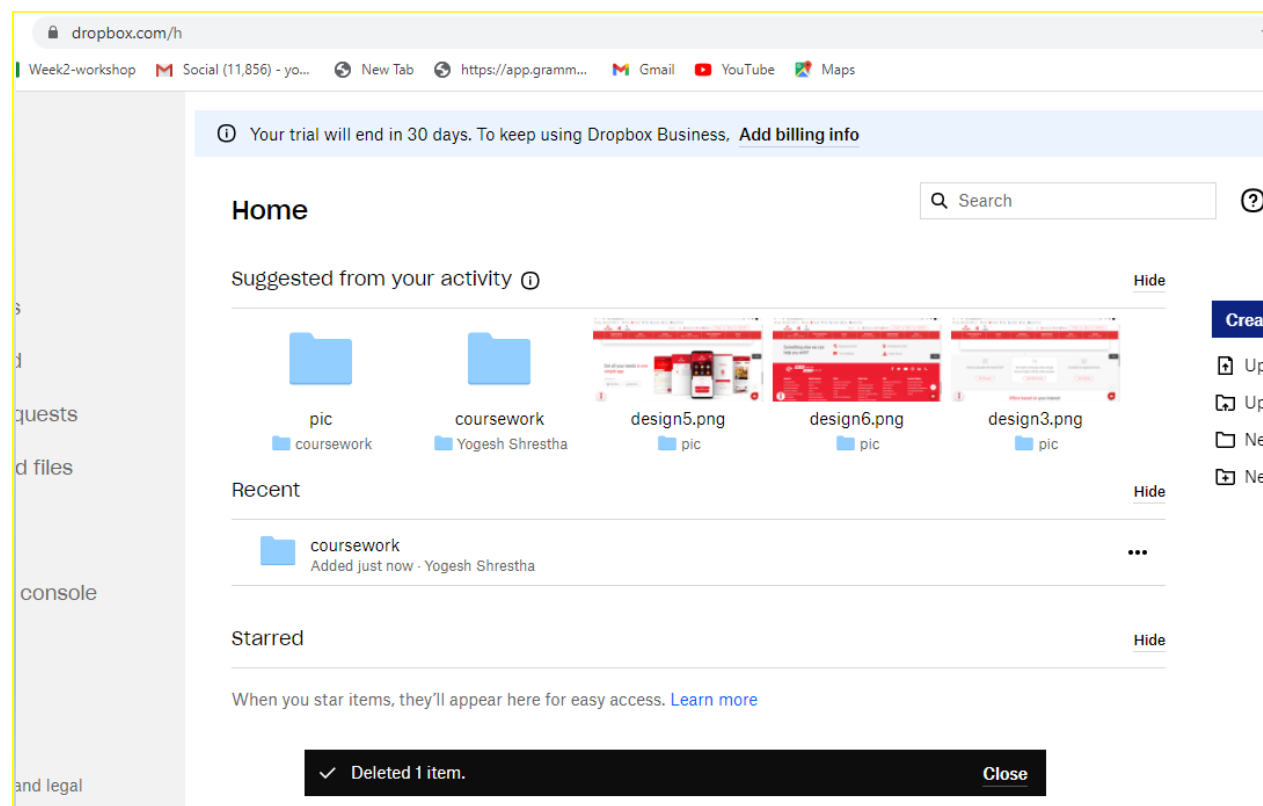


Figure 13

- Instant relief to find that “undo” option after a mistake is not made.

7. Support Internal Locus of Control

The screenshot shows a web browser window with the URL `boostedusa.com/26814546031/checkouts/3c298254d3d1f9325a273c0e69a53a43?_ga=2.147010673.777179126.161681`. The page is titled "shipping address". The form contains the following fields:

- First name: Yogesh
- Last name: Shrestha
- Company (optional):
- Address:
- Apartment, suite, etc. (optional):
- City:
- Country/Region: United States (dropdown)
- State: State (dropdown)
- ZIP code:
- Phone: (with a question mark icon)

At the bottom of the form, there are two buttons: "Continue to shipping" (highlighted with a red box) and "Return to cart" (in red text). To the right of the form is a sidebar with the following items:

- Subtotal
- Shipping
- Total

Figure 14

Upload to...

golden

The screenshot shows a file upload interface. At the top, it says "Upload to..." followed by "golden". Below this is a folder named "Yogesh Shrestha" with a purple icon and a right arrow. The folder is empty. At the bottom of the interface, there are two buttons: "Cancel" and "Upload" (highlighted with a red box).

Figure 15

- Both websites make users feel in control of the system.

8. Reduce Short-Term Memory Load

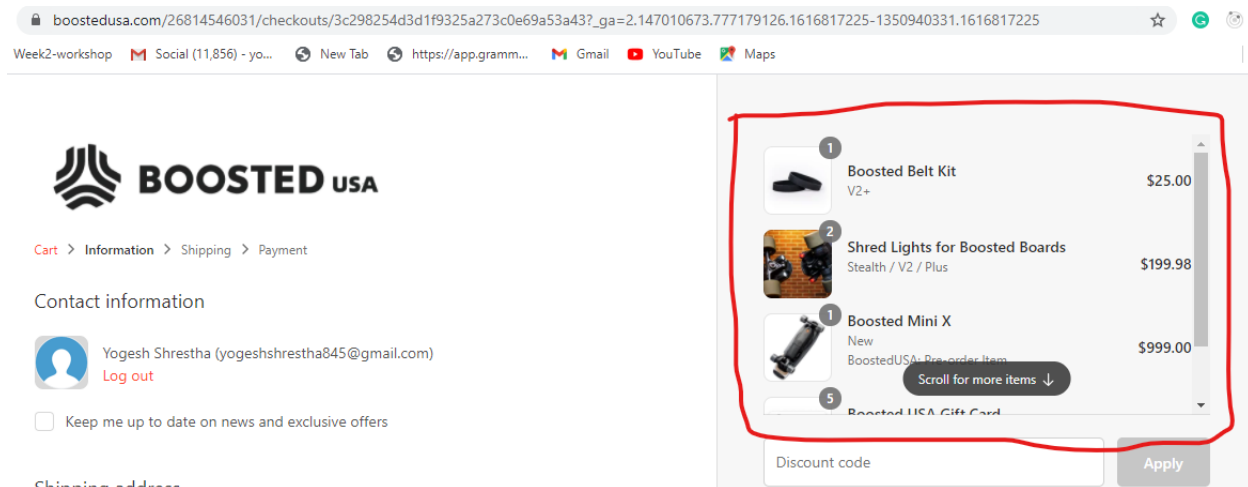


Figure 16

- The product items that are added to craft are listed.

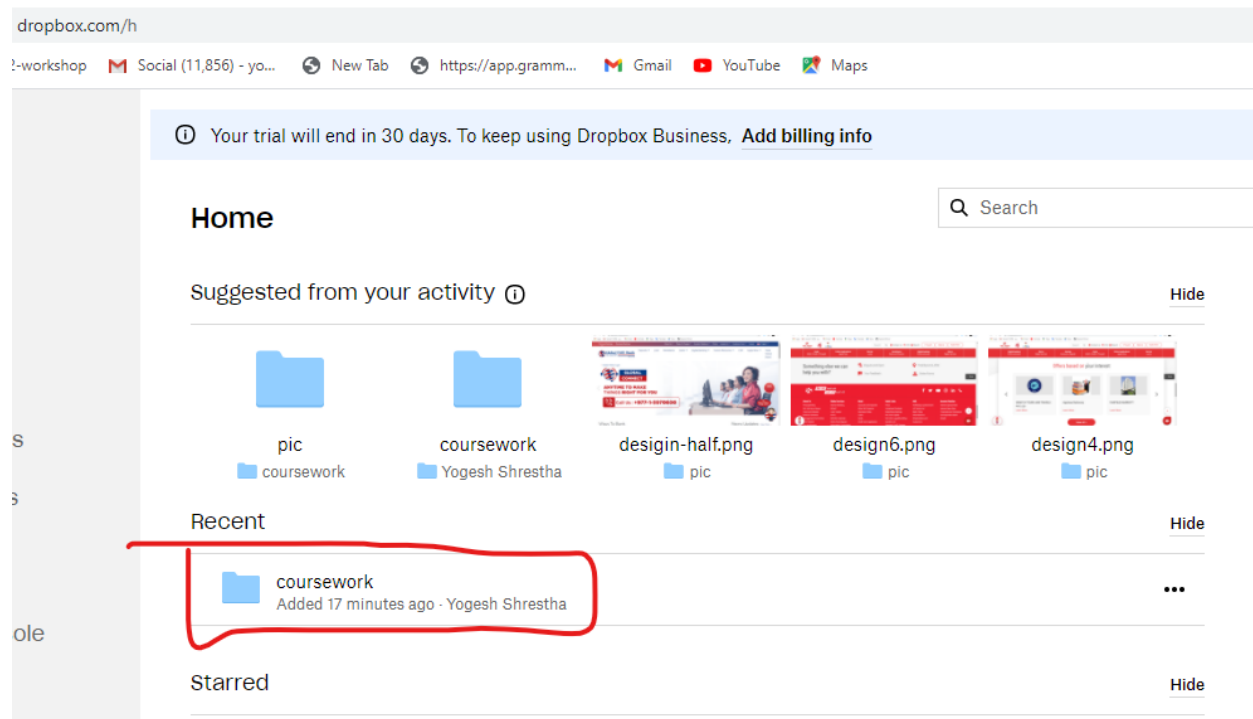


Figure 17

- In the drop box environment, a list of recently viewed or uploaded items is displayed. (Santos, 2018)

Jacob's rules

User Experience is a qualitative measure that is influenced by a variety of variables. Apple, the forerunner of great user interfaces, humbly labels their iOS Human Interface Guidelines as Beta, indicating that it's an emerging discipline. Google's material design guidelines are defined as a "living text" that will be updated regularly. Jakob Nielsen, with his heuristic assessment, was one of the first to try to critically assess the user experience on digital platforms. These general rules of thumb, which date back to the 1990s, are still valid and in use nowadays.

In this report, I attempt to explain these 10 rules in common language with examples:

1. Visibility of System Status

- The “Boosted usa” website does not inform about what is going on. For example, it does not show any animation pic or message while loading.

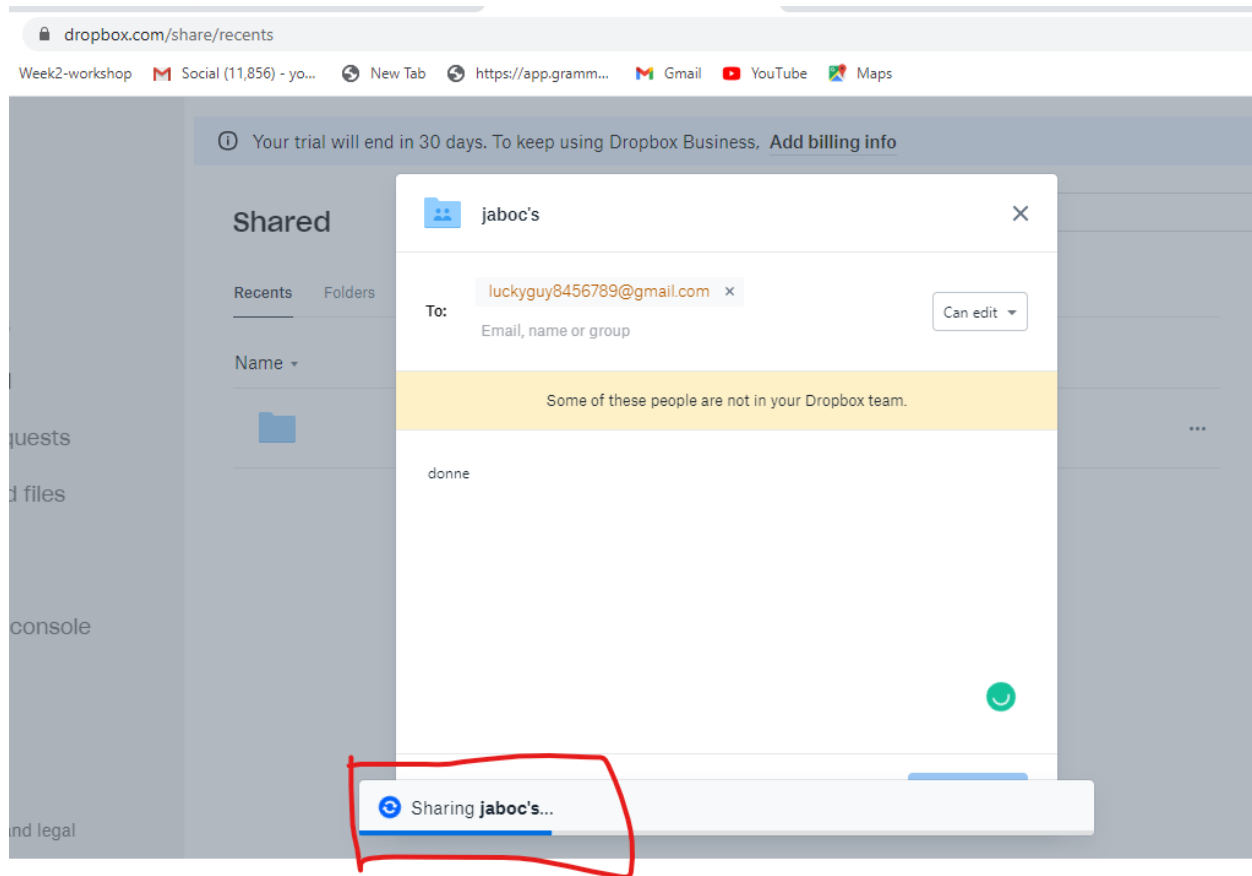


Figure 18

- Dropbox is informing users about what is going on.
- It cannot create sound when the file is uploaded or shared.

2. Match between system and the real world

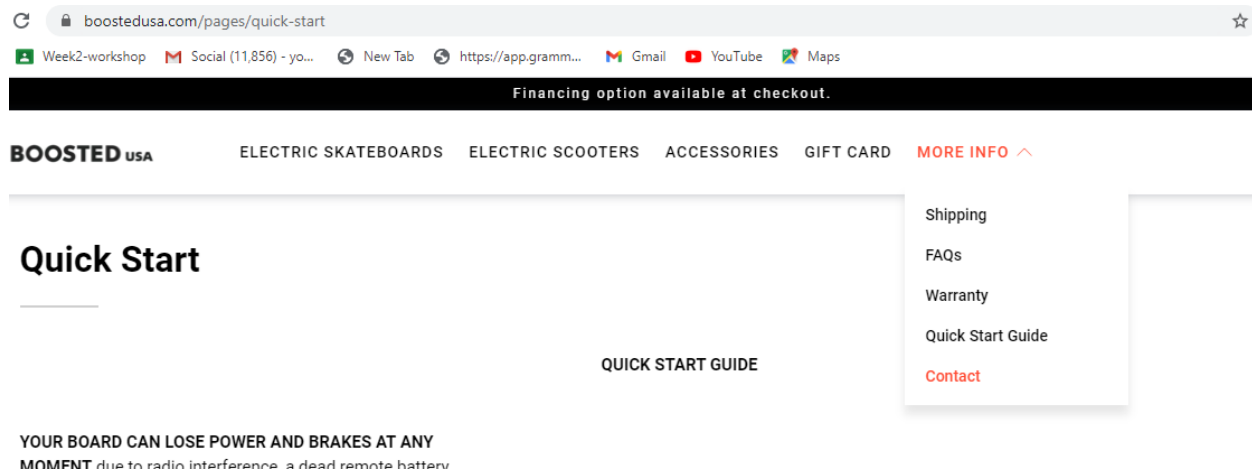


Figure 19

- Techy terms are used, rather than terminology

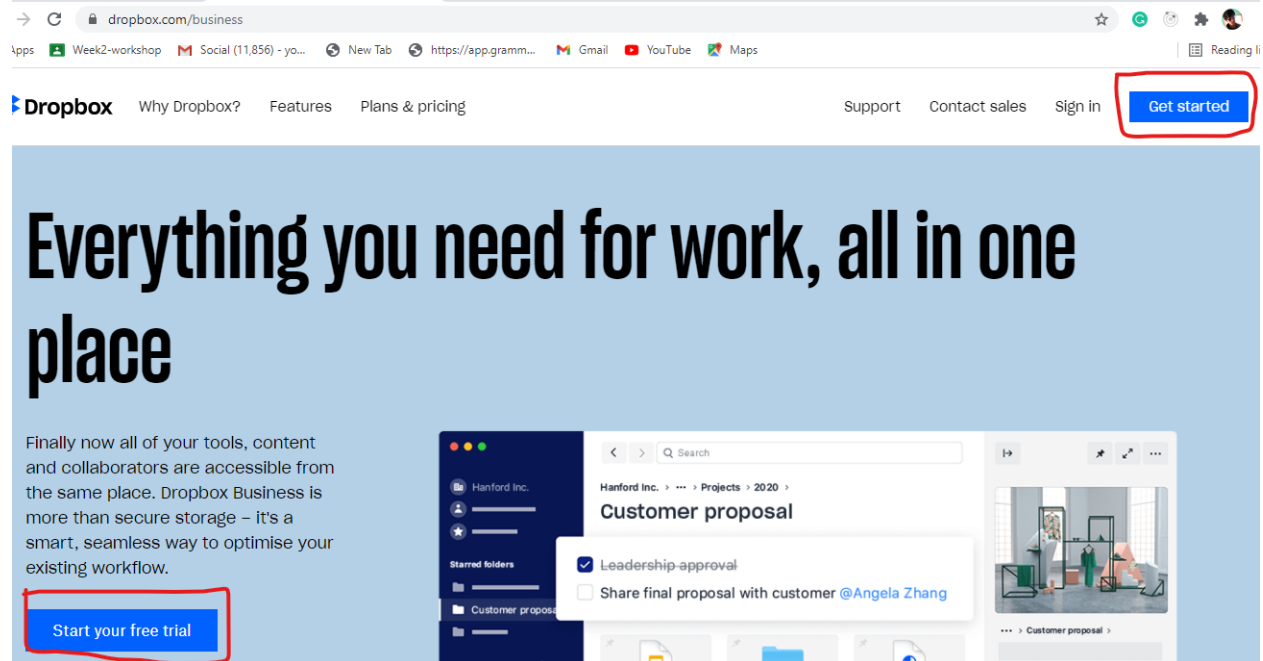


Figure 20

- Used user terminology, rather than a techy term.
3. User Control and Freedom
 - Both chose websites, User does not have control over the system, ‘Undo/redo’ etc.
 4. Consistency and Standards
 - Both websites, do not follow Consistency and Standards. For example, the colour or shape of the button does not change after a successful payment or uploading file.
 5. Error Prevention

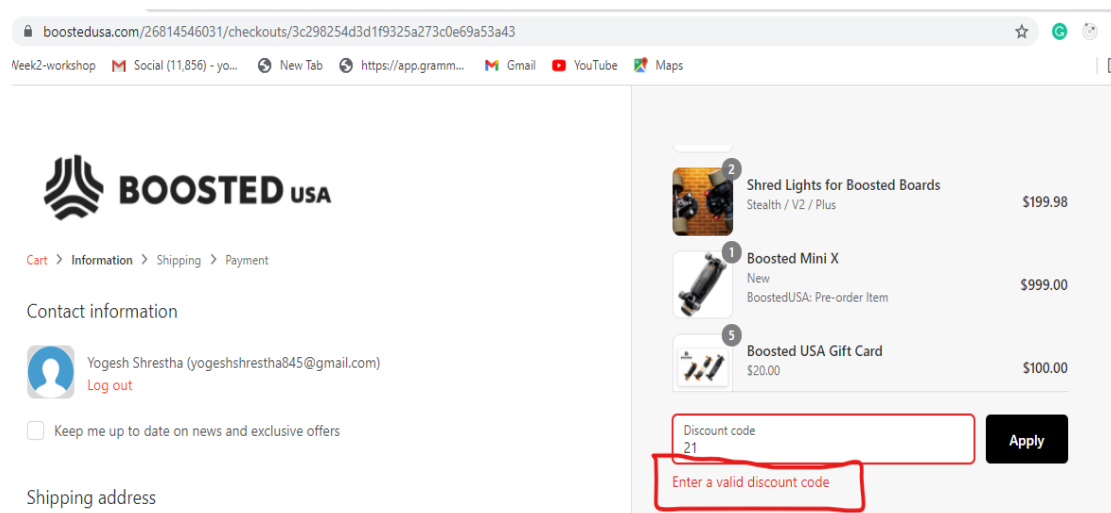




Figure 21 Try to anticipate/prevent user errors

Sign in

or [create an account](#)

 Sign in with Google

 Sign in with Apple

or

y@gmail.com



☒ Remember me

Sign in

Figure 22

- Do not try to anticipate/prevent user errors
6. Recognition rather than recall

Email address*

y|



Yogeshshrestha845@gmail.com

.....

Manage passwords...


[Forgot your password?](#)


New Customer? [Sign up](#)

Figure 23


- It's always preferable to present the user with a set of choices rather than asking him to remember and type anything. The aim is to use user memory as little as possible.
- Recognize the user email.


Sign in [or create an account](#)

 Sign in with Google

 Sign in with Apple

or






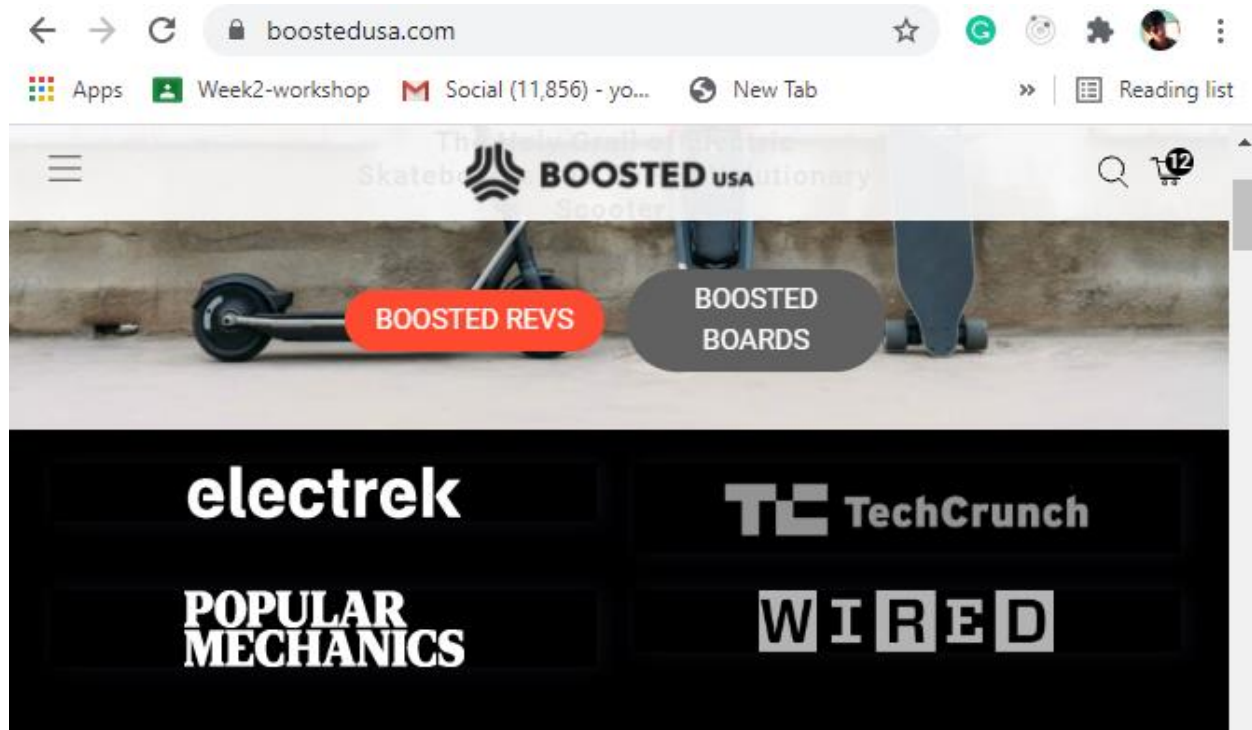
☒ Remember me 

Figure 24

- Do not recognize the user email.
- Flexibility and efficiency of user
 - Both websites do not follow the flexibility and efficiency of the user because both websites do not have a search button for novice users alike.
 - Aesthetic and minimalist design



Looking for Boosted Boards, or Boosted Revs?

Boosted USA acquired **all** of the remaining inventory directly from Boosted. This means we have the electric skateboards and scooter you all love and have been looking for. Get your hands on these **highly sought after**

Figure 25

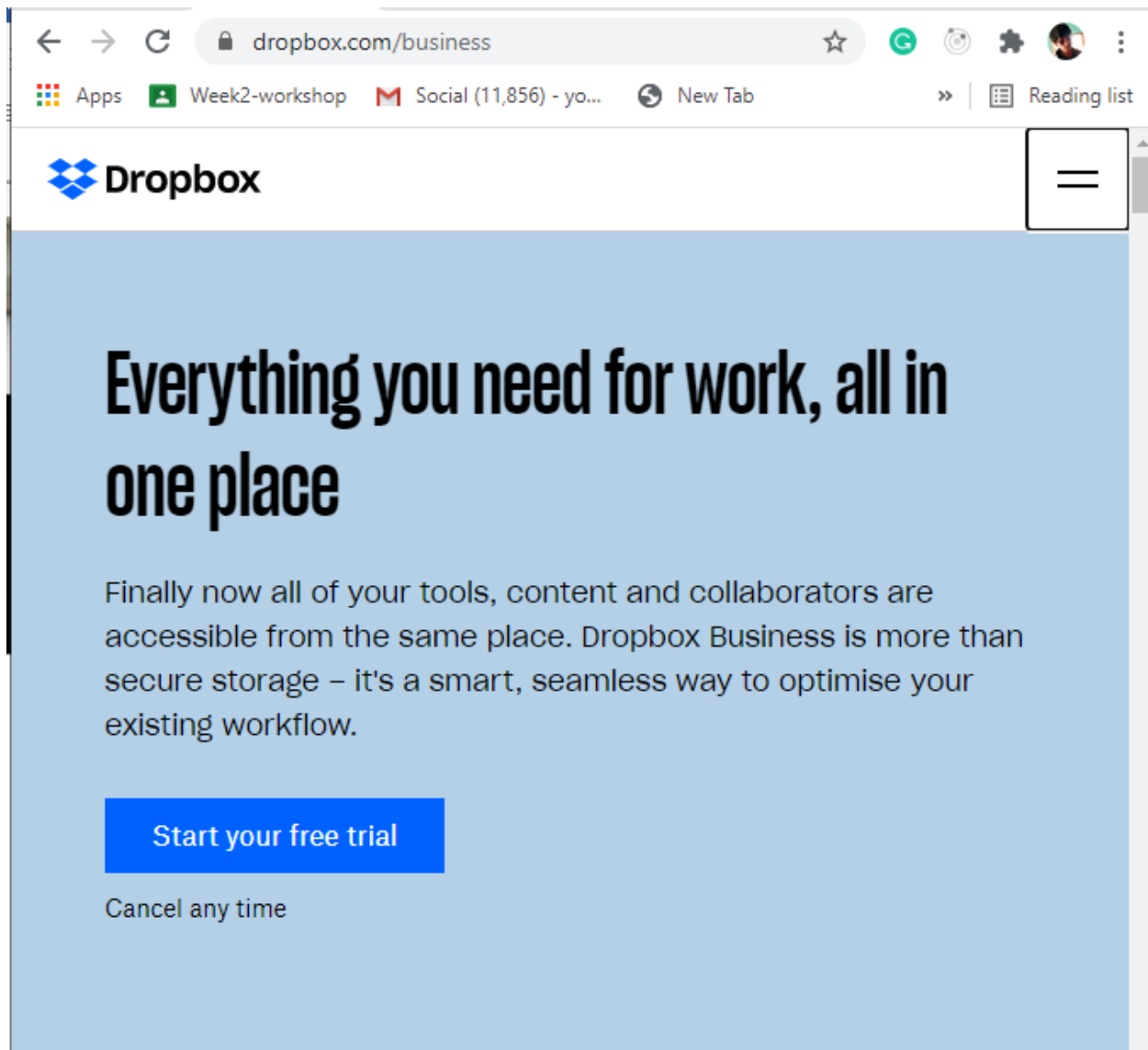


Figure 26

- Unnecessary elements and content that do not help the page's goals and tasks should be removed from the interface.
- Both websites follow Aesthetic and minimalist design because necessary information is displayed on the interface.

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

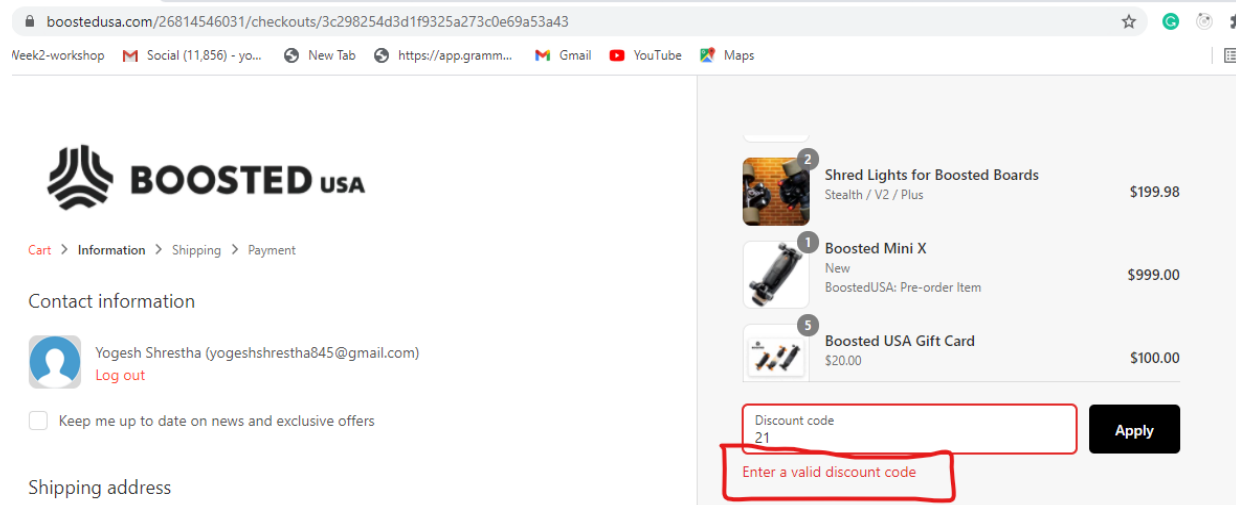


Figure 27

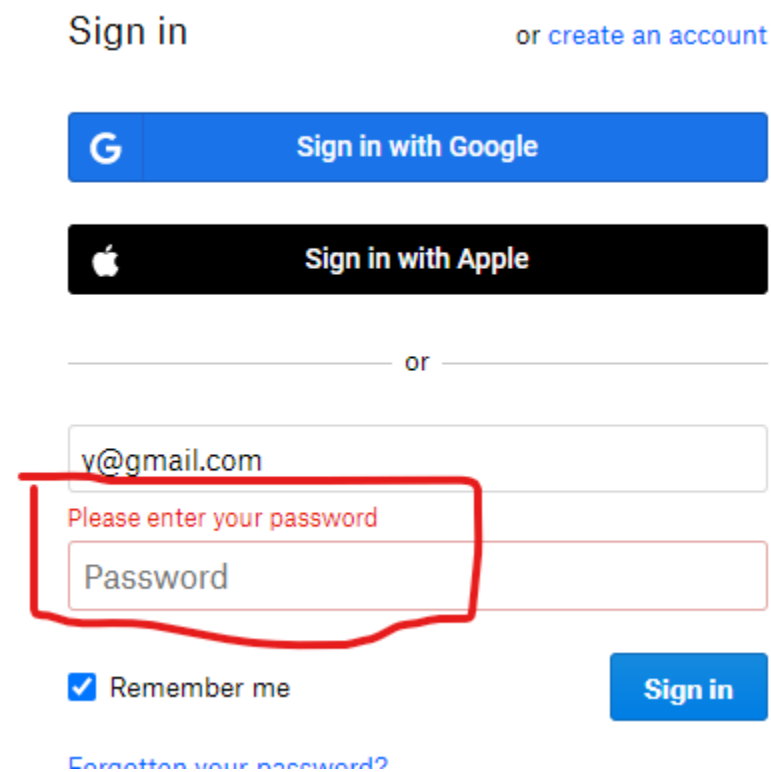


Figure 28

Both websites display Error messages in plain English but do not recover errors.

10. Help and Documentation

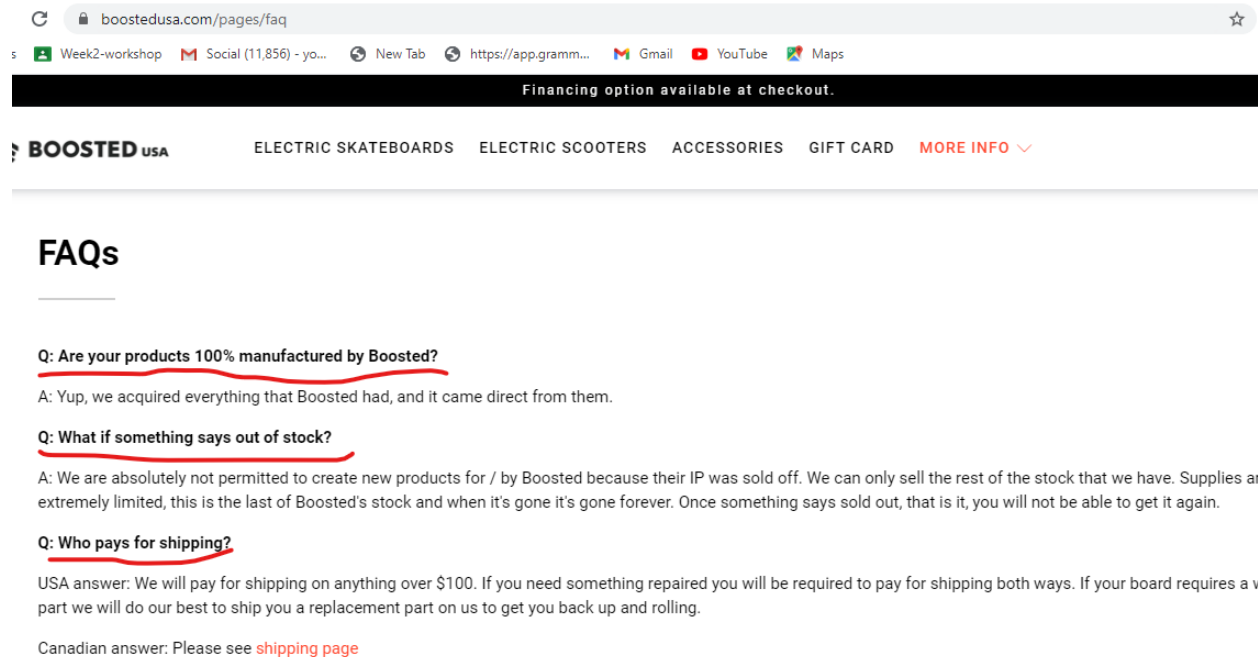


Figure 29

- It has a help page that follows help and documentation.
- It does not have a search field.

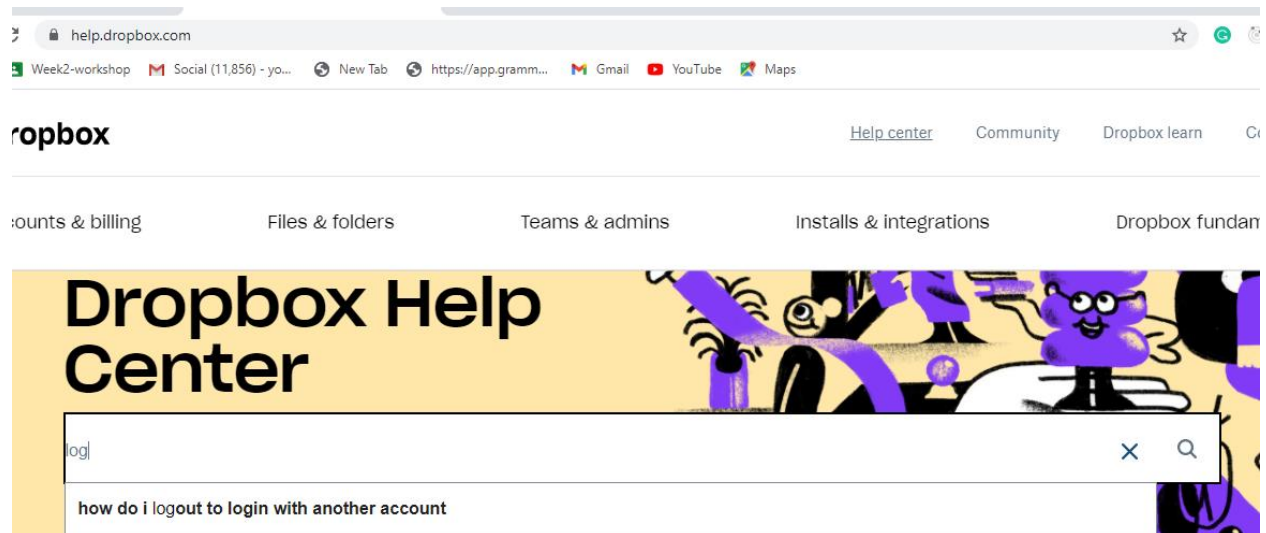


Figure 30

- It has a help page with the search field. (Duggirala, 2016)

Conclusion

Although heuristic-based decisions should always be taken with a grain of salt, adhering to a set of rules and guidelines will point you on the right path and enable you to identify major usability issues early in the design process. These eight concepts apply to most user interfaces; these are based on Shneiderman's observations and have been refined over three decades. With a few exceptions, these principles are universal rules of thumb that can be applied to any site or mobile application. Always use your best judgement when putting these principles into practice.

You may use these as a starting point for developing your heuristics or combining existing examples to fix your design problems.

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