



Designing for Down Syndrome

IDIA 640 | Byron Buckley

What is it?

Down syndrome (DS) is a disorder that manifests itself in disabilities that affect all three major types of capabilities:

- cognitive,
- motor, and
- perceptual

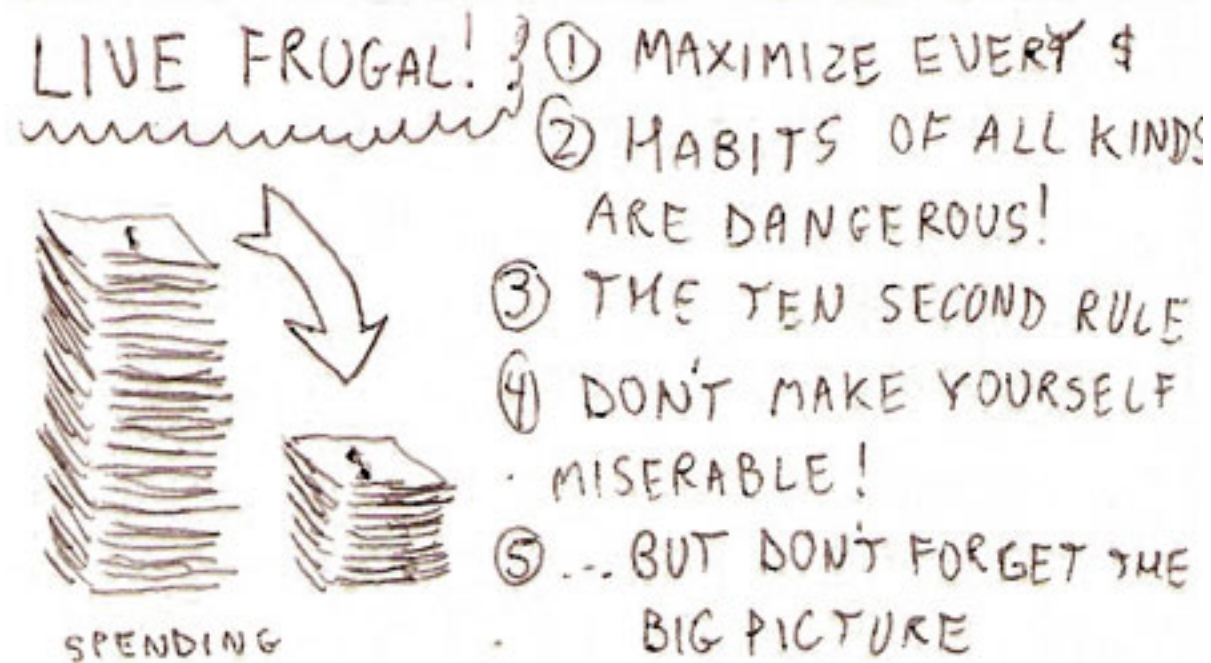
- Down syndrome sufferers with moderate to mild mental retardation (IQ: 40-70 range).
- Individuals able to effectively use the equipment as is with no modifications to the keyboard or mouse or other assistive technology or modifications
- Individuals able to observe the various visual cues in applications and the OS.



Target Users

- Persons able to undertake/understand abstract tasks (such as CAPTCHAs etc)
- Individuals who had taken formal computer classes, at some point in their lives, anywhere from elementary school to post-secondary and continuing education.

Budgeting

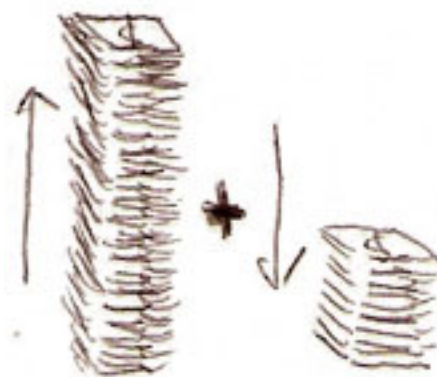


Budgeting



Budgeting

MANAGE MONEY!



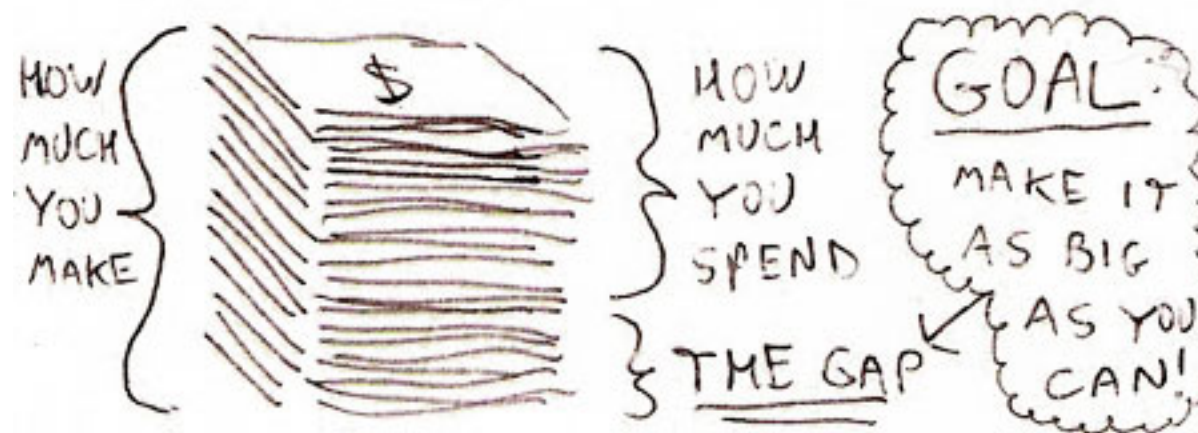
EARNINGS + SPENDING = BIG GAP!
UP DOWN



- ① PAY OFF ALL HIGH INTEREST DEBT (CC's)
- ② BUILD AN E-FUND
- ③ MAX OUT RETIREMENT
- ④ COLLEGE SAVINGS?
- ⑤ PAY OFF ALL DEBTS
- ⑥ INVEST! LOW-COST BROAD-BASED INDEX FUNDS

Budgeting

THE MOST IMPORTANT THING!
SPEND LESS THAN YOU EARN!



Personas



Brian Clay, age 30
Single
Philadelphia, PA
Supermarket Attendant

Backstory

Brian has multiple tasks at the supermarket. Over the past year he has put groceries in bags for customers, he also assists customers at the self-checkout line. He has Down syndrome, and has difficulty with abstract concepts, reading, and doing mathematical calculations.

Motivations

Mr. Clay usually buys his own groceries at the supermarket he works at since its familiar. His difficulty with abstract concepts causes Brian to prefer the familiar.

Frustrations

Brian finds it difficult to keep track of how much he is spending daily. He often conducts multiple transactions at the supermarket and spends money for transport and various activities.

Ideal Experience

Consistent navigation, plain language for interface copy and instructions. Accelerators to aid in selecting UI elements along with word prediction for form fields would also be effective. Word prediction would also bring up previously entered budget items.

Personas



Michael Lazar, age 25
Single
Rochester, NY
Data Entry Clerk

Backstory

Michael is a data entry clerk at a manufacturing firm. He enters and maintains customer information in the company's system. Sorting mail is also a part of his tasks.

Motivations

Michael is interested in living independently like his neurotypical peers. His parents have stated that he must demonstrate the ability to manage his income properly before they allow this. He has been using the computer since elementary school and is pretty comfortable using one. His parents think the computer is a good medium to aid him with income management.

Frustrations

While Michael has many skills in his favor as a person with Down Syndrome, his challenges with math, and by extension his budgeting issues is a sore point for him since he really wants to self actualize by living on his own.

Ideal Experience

Consistent navigation, plain language for interface copy and instructions. Accelerators to aid in selecting UI elements along with word prediction for form fields would also be effective.

Application Demo


[View Demo @
http://komplexb.github.io/easy-
budget](http://komplexb.github.io/easy-budget)

Aid with Distinguishing and Understanding

- Easy-to-read text (Plain Language) for copy text
- Avoiding popups and unnecessary animations
- Progressive Disclosure
- Reduced Interface

Design Approach

Easy Budget







Income ↓

How much money did you get?

What did you do to get it?

Add

Income 1	10	
Income 2	10	
Income 3	10	





Expenses ↑

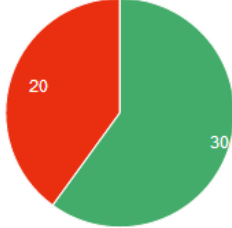
How much money did you use?

What did you use it to do?

Add


Expense 1	10	
Expense 2	10	

Show Budget Graph >



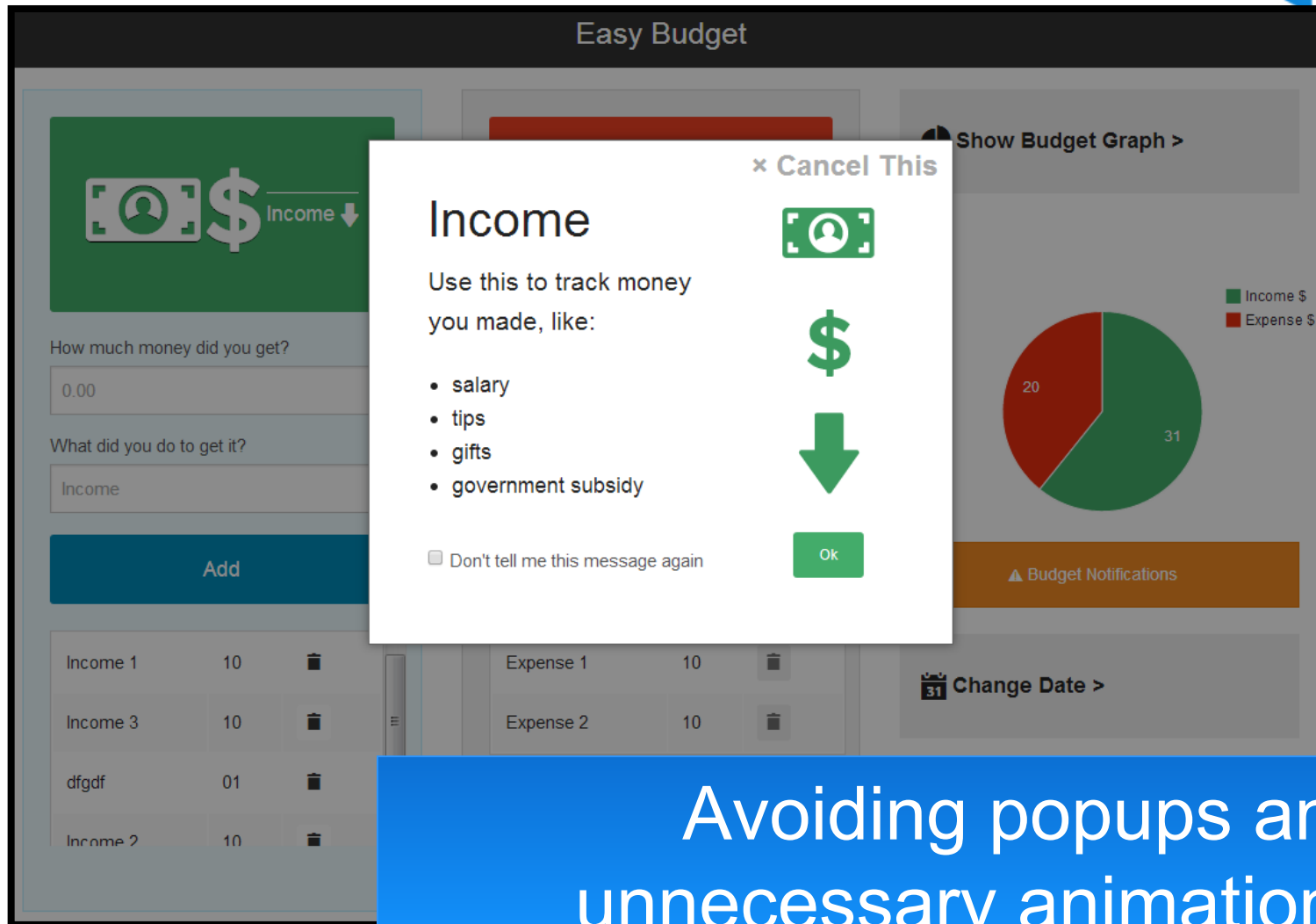
Income \$
Expense \$

Budget Notifications

 Change Date >

- ✓ Progressive Disclosure
- ✓ Reduced Interface

Design Approach

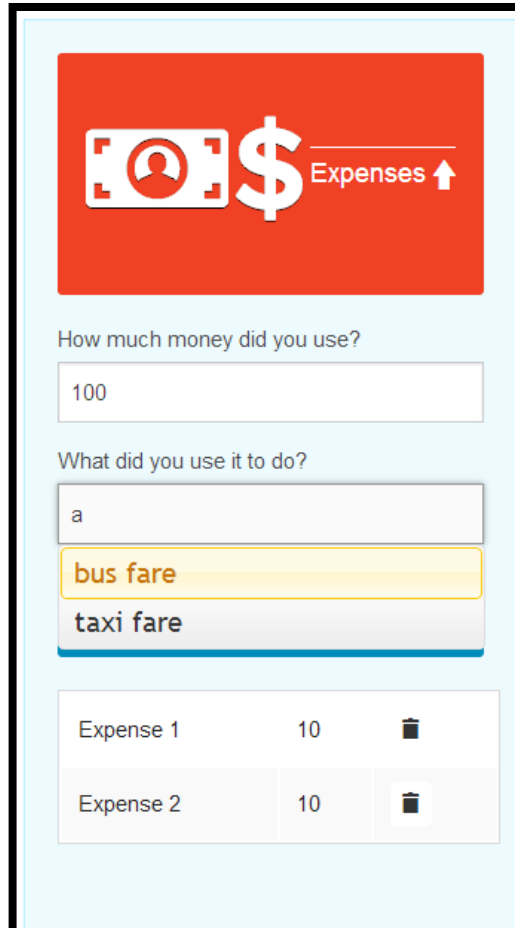


Avoiding popups and unnecessary animations



Aiding with User Interaction

- Accelerators
- Spelling and Grammar Tools

Design Approach



The mockup shows a mobile app interface for tracking expenses. At the top is a red header with a white icon of a wallet and a dollar sign, followed by the text 'Expenses' and an upward arrow. Below the header, there are two input fields. The first is labeled 'How much money did you use?' and contains the number '100'. The second is labeled 'What did you use it to do?' and contains the letter 'a'. Below the second input field is a list of suggestions: 'bus fare' (highlighted in yellow) and 'taxi fare'. At the bottom, there is a table with two rows of expense data.

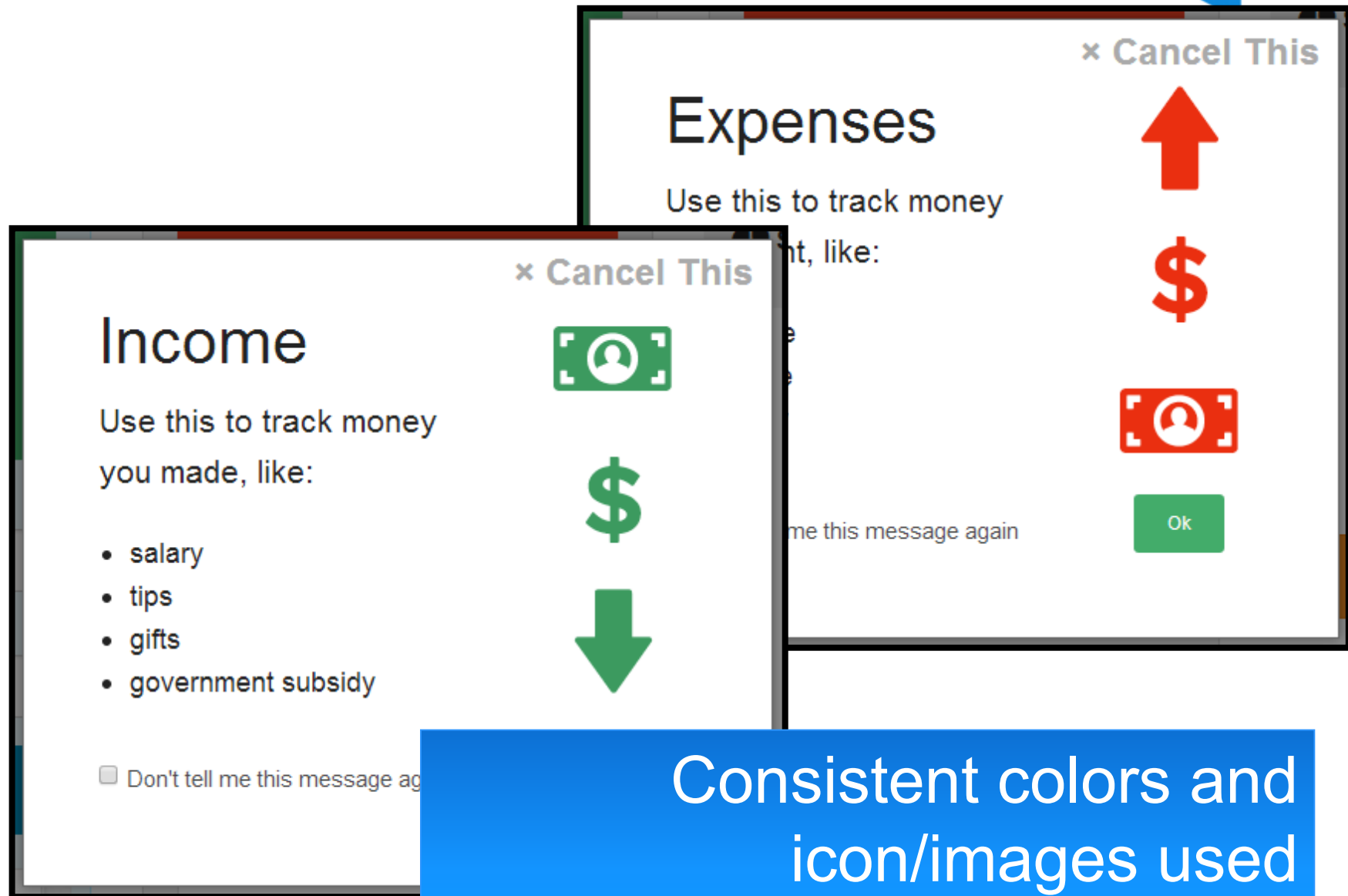
Expense	Amount	Action
Expense 1	10	
Expense 2	10	

Autocomplete as an
accelerator.

Aid with navigation and finding content

- Consistency and predictability
- Helpful error and success messages
- Multiple navigation mechanisms

Design Approach



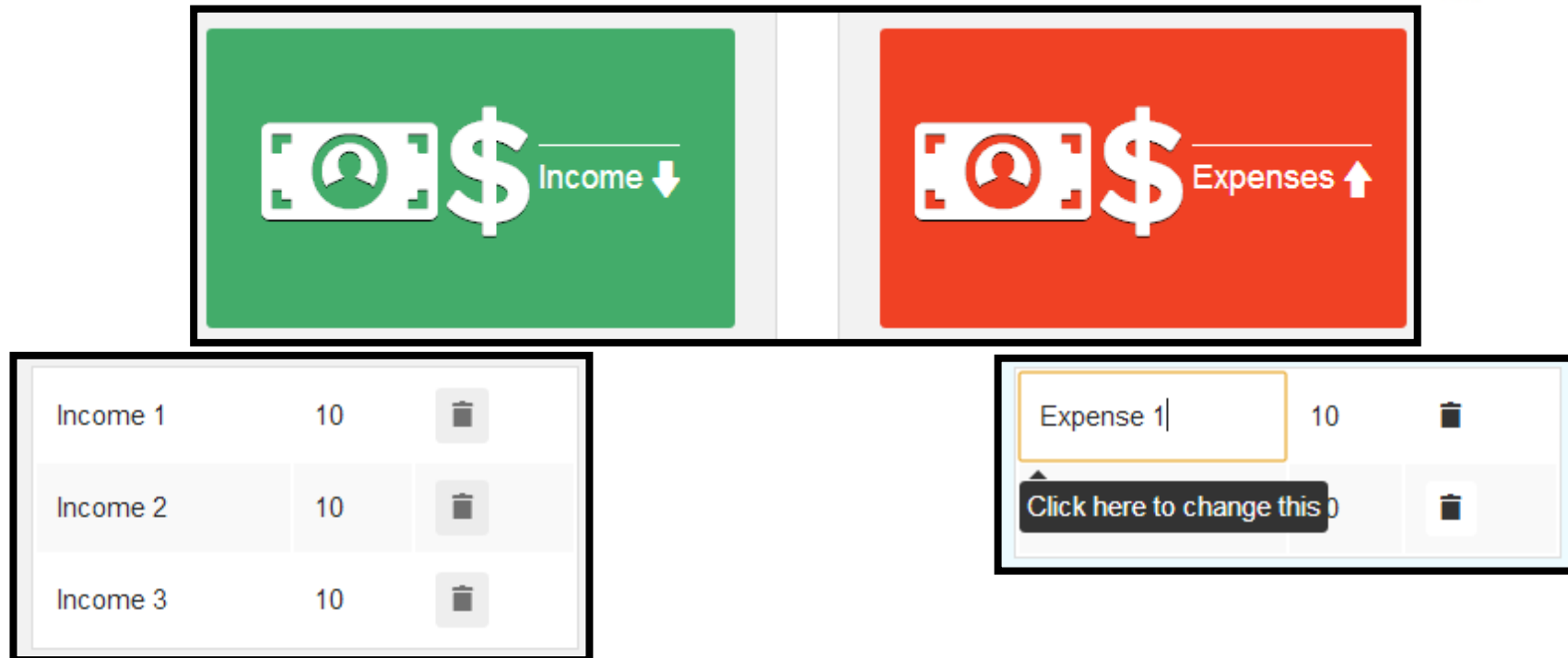
Consistent colors and icon/images used



Design Approach

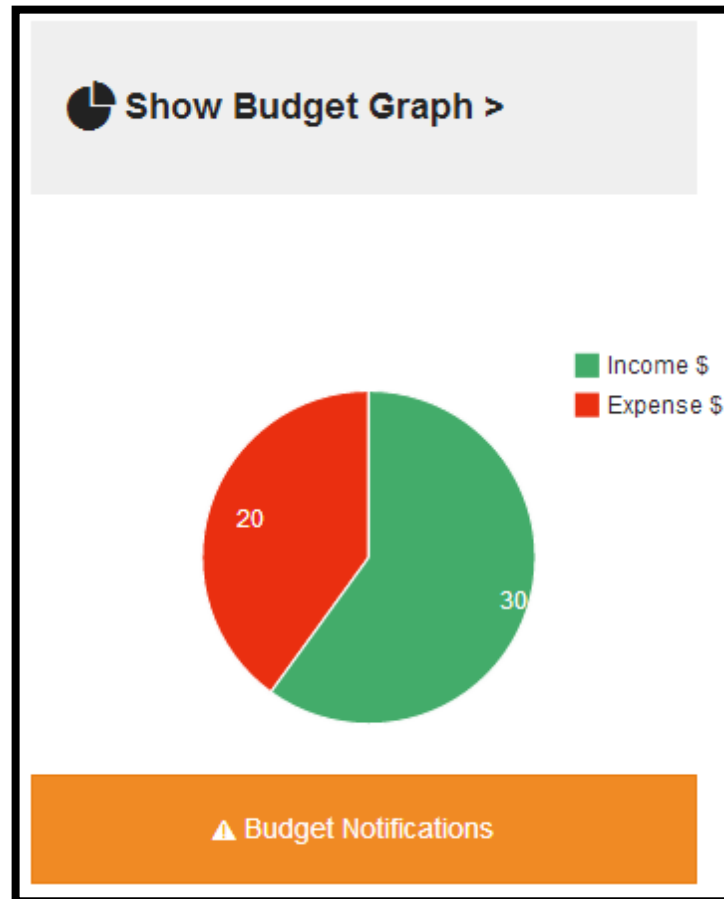
- Provide clear guidance, feedback and rewards.
- Don't underestimate the impact of images.
- Remember that everything means something.




Design Approach




- ✓ Use of images via icons
- ✓ Tooltips provided for elements with low affordance

Design Approach



Income 1	10	
Income 2	10	
Stipend	12	

 Put it back?

✓ Feedback

Sources

- Kirijian, A., Myers, M., & Charland, S. (2001). **Web Fun Central: Online learning tools for individuals with Down syndrome**. Retrieved from Interaction Design: Beyond human-computer interaction: http://www.id-book.com/secondedition/downloads/casestudy_10point1.pdf
- Kumin, L., Lazar, J., & Feng, J. H. (2012, 06). **Expanding Job Options: Potential Computer-Related Employment for Adults with Down Syndrome**. Retrieved from The ACM Digital Library: acm.org
- "Mr. Sands, Supermarket assistant with Down syndrome." **Stories of Web Users How People with Disabilities Use the Web**. N.p., n.d. Web. 27 Nov. 2013. <<http://www.w3.org/WAI/intro/people-use-web/stories#supermarketassistant>
- Hamm, Trent. **"Everything You Ever Really Needed to Know About Personal Finance On Just One Page"**. N.p., n.d. Web. 28 Nov. 2013. <<http://www.thesimpledollar.com/onepage/>>.



Thanks!