

# Report of the Design Research

Team Reuse: Eugene Szeto, David Liu, Shanelle Roman, Valentine Quadrat

## 1) Title: “reJoy”

**2) Team:** David Liu, Eugene Szeto, Shanelle Roman, and Valentine Quadrat all contributed to every component of the design research process from being actively involved in discussions to drawing sketches to brainstorming to writing out analyses.

## 3) Problem & Solution

### *Overview of the Problem*

In our consumer-driven world, humans often collect an overabundance of stuff. Marie Kondo, the author of *The Magic Art of Tidying Up*, has inspired a revolution in cleaning and surrounding oneself with things that give one joy. What has not received as much attention is what to do with the items one no longer wants or needs. The worst case scenario is that the items get trashed and the cycle of buying new goods and then trashing them continues.

With hundreds of thousands of pounds of items trashed during college move-outs across the US every year, we are focusing on tackling this problem in the context of university campuses. Facilitating a second life for used goods in a university campus community increases the likelihood that someone at a similar life stage in terms of classes, trends, and social events would find them useful.



*“Salvaging reusable items from NYU's dumpster”*

<https://lifehacker.com/college-move-out-what-to-do-with-all-that-perfectly-go-475873365>

### *Proposed Solution*

Our proposed solution is a mobile app for university students that provides a fast and easy process for selling used books and clothing. The app allows you to quickly input basic information on an item you want to sell, get a QR code to tape on the item, and then drop the item off in a secure box on campus. Our system then sells the item on the user's behalf leveraging social discovery features.

#### 4) Research Goals, Stakeholders & Participants

##### *Design Research Goals*

Through our design research we aimed to understand what students across campus do with items they no longer want or need, what their motivations are for selling and donating, what items are most popular in the second-hand marketplace, and what existing platforms do they currently use to fulfill their goals. We sought to hone in on frustrations students experience with acquiring and getting rid of new items and pain points triggered by their go-to platforms.

##### *Methods*

1. Contextual Inquiry
  - a. We asked buyer and sellers to walk us through their process of acquiring and getting rid of items from beginning to end in their homes. Our goal was to deeply understand the routines, needs, motivations, and pain points of the most relevant stakeholders. This method was instrumental in enabling us to identify key tasks for our design. We recruited participants in the midst of decluttering through Yale's Free & For Sale Facebook group.
2. Survey
  - a. We sent a survey out to the Yale community through social media channels to gauge the general preferences of the population in terms of how they perceive second-hand goods, which items they seek second-hand, which platforms they use, and the pros and cons of these reuse systems.

##### *Stakeholders*

In the reuse space, there are two primary users involved: the giver (or seller) and taker (or buyer). The chart below lists the types of identities we targeted in the Yale campus community.

Example Identities	Potential Background	Potential Motivations
Those who are moving in / out	May have a fixed time period to get rid of things	<b>Environmentally-conscious:</b> May reuse items in creative ways. Engage in swaps. Shop at Goodwill. May dumpster-dive.  <b>Budget-minded:</b> Bargain lovers who take advantage of coupons and sales. They enjoy free stuff.  <b>Socially-conscious:</b> Donate to charity. May run donation-drives in their community.  <b>Convenience seekers:</b> Limited time. Value proximity in
Those who are in a life phase transition	May have limited ability to travel long-distance for transactions	
Those who are decluttering space	May have used U-Haul / Storage Units / Moving Services before	
Those who are redecorating	May have experience with Facebook Sale groups, Craigslist, eBay, swaps, and donations to the Salvation Army. May use libraries, gyms, and other community facilities	
Those who are just browsing / looking for a good deal		

		transactions.
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### Participants

Contextual Inquiry: We spoke to all three participants in their homes, the space where they consider getting rid of items or acquiring new items.



- Participant #1 is a Chinese-American Yale graduate business student in her early thirties from Cincinnati, Ohio. She went to Northwestern, worked in consulting and education impact investing, loves hiking and skiing, drives a CRV, is an only child, and only buys “functional” things. She sells and donates clothing, books, and furniture. She described objects in her bedroom from a resale perspective and walked us through what her process will be for getting rid of specific items in her room.
- Participant #2 is a Yale graduate business student in her early thirties who grew up shopping at Goodwill with her family (90% of her clothes are from Goodwill), worked in the sustainability sector, and is launching a dumpling startup. She acquires clothing, furniture, appliances, and beer bottles (for homebrewing) second-hand. We followed her through the process on her computer of creating an ebay account, posting items for sale, and responding to interested parties. She also walked us through the process of storing clothes for future donation in her bedroom and attending a clothing swap.
- Participant #3 is a Yale undergraduate from San Francisco who lives off-campus by himself, wants to be a product manager, is an audiophile, and buys used books. He likes to browse and stumble on things to buy and tends to “overthink everything.” He voiced aloud his thought process as he scrolled through the Free & For Sale Facebook group, identified items in his living room that he is considering selling, and crafted a Free & For Sale posting for headphones he might sell.

### Google Forms Survey:

- 13 Yale undergraduate and graduate student respondents

## 5) Research Results & Themes

*Key Findings:* Overall, individuals have differing preferences regarding their valuing of time and an item’s quality which determines whether they buy/sell second-hand, donate items, or just buy new / throw items away. Buyers are always trying to negotiate a lower price, but sellers dislike haggling. Buying is a time-consuming process that can be a double-edged sword - some people enjoy the process, but others

prefer buying goods new because it's faster (in a time-sensitive situation) or they can get exactly what they want.

Our contextual inquiries validated our initial hypothesis about who participates in the reuse space. Potential users include people who 1/ are moving in/out of housing, 2/ are looking to declutter, 3/ need certain items.

#### *Common Themes, Problems, & Practices:*

##### **1. Time/Energy**

Depending on the amount of time and energy somebody has, they choose between selling, donating, or trashing. Furthermore, the choice of platform to use in selling or donating also hinges on this time/energy factor. In the reuse space, it's a commonality that people want to minimize the amount of time and energy needed to rid of their things, noting that the marginal value that can be gained from more interaction or negotiation isn't worth it.

##### **2. Quality**

Quality plays a large role in the evaluation process for buyers, impacts the kind of goods present on resell markets, and poses a communication challenge for sellers in conveying the quality of their goods. Some items inherently depreciate slower and do better on resell markets. Some people refuse to buy certain items on resell markets because of the difficulty of ascertaining their quality.

##### **3. Top Down / Bottom Up (Intentional or accidental activity in the resell space)**

We've noticed that some people have the goal of purchasing second hand items from the beginning while others stumble upon goods that pique their interest. A similar dynamic exists on the seller side in which some people gather items together in preparation to sell or donate them, and others do it more spontaneously when the opportunity to sell arises or they feel that they should get rid of an item. Some platforms, such as a yard sale or a donation center, may work better for those who have a top-down approach to getting rid of used goods, i.e. the people who pile up things that they want to get rid of. Other platforms, such as Free & For Sale (Yale Facebook group), may work better for those who spontaneously want to get rid of one item.

##### **4. Identity**

Our possessions are a representation of ourselves and that influences how we choose to get rid of our items. One of our contextual inquiry participants expressed how he/she prefers to resell/donate anonymously, and also would feel a sense of rejection if some things he/she leaves to donate on the street weren't taken. It's also common that people feel tied to certain possessions and are driven to either keep those items despite their lack of functional purpose or to give them to somebody who would definitely take care of those items.

#### **6) Task Analysis**

##### *a. Crafting a posting to advertise your item (seller) - Medium Difficulty*

Josh recently cleaned up his apartment and gathered a list of items he wants to sell. These items include a pair of headphones, Michael Jordan sneakers, a few textbooks, two lamps, and a computer monitor. As an undergraduate who's double majoring, he has very little time and just

wants to sell these items quickly. He doesn't care too much about getting the exact monetary value from his things, and would mostly prefer they don't go to waste. He goes on an online marketplace and prepares to create posts for his things. He finds that for many of his things, he doesn't have much to write but doesn't want to write too little in fear that others don't treat him seriously as a seller. He also is annoyed that it's difficult to get good lighting for the photos he has to take. He honestly just wishes that he can create these postings a lot more quickly and get it done with.

*b. Finding the item you need (buyer) - Medium-High Difficulty*

Sally is a senior studying Computer Science who wants to find a new rice cooker. She's looked at traditional retailers like Amazon but they are so expensive! She doesn't think she should have to spend 30 dollars on such a small item. She thinks about visiting the nearby thrift store but it's far from campus and she's busy. She goes online and searches for second-hand rice cookers, but there are so many listings, the search filters seem too broad, many of the descriptions are long and time-consuming to skim through, and she's not sure about the different brands. She can't figure out which item to buy! She also hasn't found one small enough to fit her cramped kitchen. Now she's wondering if she should adjust her search parameters and just get one that looks like it would get the job done.

*c. Deciding whether the transaction is worth it in terms of price & quality - Medium-High Difficulty*

Baxter is a recent graduate from Northwestern who lives in Seattle. He's on the job hunt, and his dream job is to be a product manager at Amazon. He's an audiophile, he loves used books, and he's been eating a lot of ramen lately. He wants to improve his diet, so he's on the market for a rice cooker. He found one that looks promising on eBay. It doesn't seem like it has any scratches or dents on it in the pictures, but the photos only show the cooker from two angles. He's also not sure what the price of a rice cooker should be, so he wants to find out the price of a new one to see if the price of the secondhand option is actually a good deal. He would really like to see the item in person to plug it in, make sure it works, and evaluate if he's happy with the secondhand quality. On the other hand, he doesn't want to delay, as surely there are other interested buyers for such a discounted, supposedly lightly-used item. He knows he tends to overthink everything. But when he just doesn't know where it's been and how it's been treated, how can he be sure that it's worth it?

*d. Confirming trustworthiness of the other party - High Difficulty*

Lasya is moving out tomorrow from her current apartment in Minnesota for a new job in Boston. She has decided that her furniture is not worth moving across the country, so she needs to get rid of several large pieces quickly. She has a bedframe, several tables, and a dresser that she wants to sell. She bought these items just two years ago, so it seems wasteful to throw them away so soon. She doesn't have time to sell them on EBay, plus they are too big for her to drag to the Post Office. She decides to list the items on Craigslist with the caveat that buyers must be willing to pick up the items. However, she's concerned about safety - there can be some sketchy people on the platform. She considers each buyer carefully, but ultimately she feels that there's no sure way to assess trustworthiness. Maybe she'll just leave it on the street for anybody to pick up - at least she won't have to meet anybody.

*e. Deciding who to give the item to - Easy Difficulty*

Bob is a college student on financial aid, and he's always trying to sell stuff that he no longer needs. Sometimes, when he posts something on the Internet, he would get lots of responses with offers. Since he wants to recuperate the costs of the items, he will want to sell the items to the highest bidder, and he wants to make sure that the transaction will be as smooth as possible. However, sometimes, one of his close friends express interest in an item he's trying to sell. Thus, he is willing to sell the item for less money, because the potential buyer is a friend. Even though he knows who he wants to ultimately sell the items to, he still has to make a decision based on the factors that he's considering.

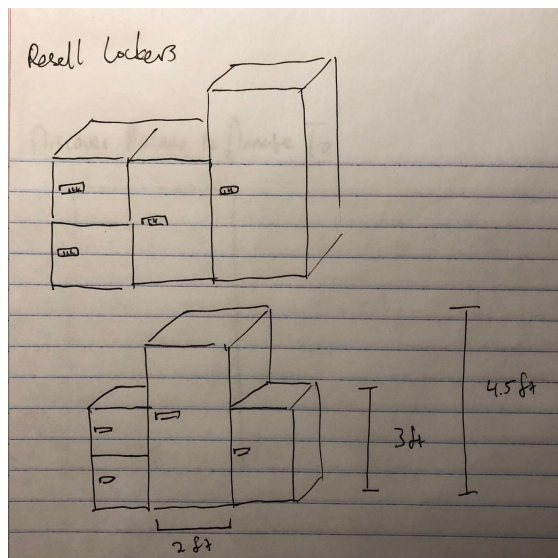
*f. Coordinating Item Transfer - High Difficulty*

Sue is a Chinese-American graduate student in her early thirties. She's preparing for her move to San Francisco after graduation to take on a finance job at a tech firm. Between studying, packing, scheduling movers, and attending goodbye dinners, it's hard to find time to coordinate with buyers interested in the bed frame and table she's selling. She doesn't want to spend much time thinking about logistics, and she definitely does not want to be responsible for transportation. She has two potential buyers interested in her bed frame, but they don't have a van to pick it up. Another interested party does have a van, but they are only available when Sue is at an exam. With the day of her move closing in, if she doesn't manage to arrange a mutually convenient time with a local who has the ability to come by and take her furniture away, she's afraid that she'll have no choice but to trash them.

## **7) Proposed Design Sketches**

### *Design 1*

This is a mobile application where users are able to curate their search to browse items within a targeted community that is more likely to offer the item one needs, which facilitates task 2. Furthermore, users can sign up for notifications that will alert them if an item they're interested in becomes available. To confirm seller trustworthiness (Task 4), users have member ratings in terms of community engagement and successful transactions on the app. The localized neighborhood aspect also reduces the likelihood of the interface being flooded with scammers operating remotely. To facilitate the process of crafting a posting (Task 1) for an item, communities offer a number of common pre-populated postings for common items. Furthermore, the system will provide a recommended price based on user input and past sales of similar items. To coordinate item transfer (Task 6), the design includes resell lockers where buyers can pick up the item by accessing a secure locker where the seller dropped off the item.



## Design 2

The essence of this idea is to make it extremely simple for students on university campuses to liquidate their books with almost zero effort using a book drop-off box (in the style of library book drop off boxes) and a mobile application. Since the seller no longer has to worry about finding a buyer or attracting a buyer, there's no need to create a posting for their books, confirm the trustworthiness of the buyer, decide who to sell the books to, or coordinate item transfer. Students take a photo of their book through the app, input the title and author, and specify the book condition. The app then generates a price based on the specified details. If the student likes the price, they print out a unique QR code, tape it onto the book, and slip it into their local drop-off box. Once the service receives the book and confirms its quality, payment is sent to the student via Venmo or another convenient digital payment mechanism. The service then sells the book at its own pace via its own mobile app, eBay, Amazon, or other platforms through a highly automated, scalable system.

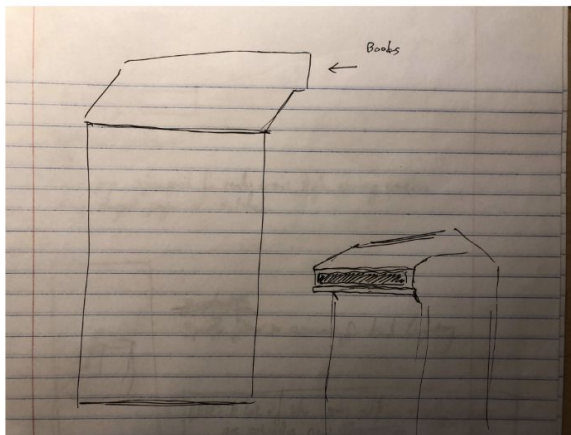
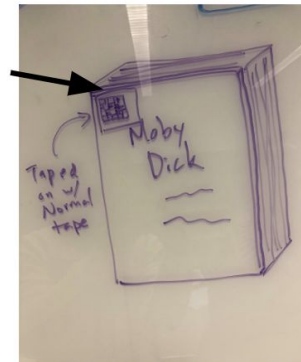
## Designs for seller side

A hand-drawn form on lined paper with a blue border. It contains the following text: "Title: \_\_\_\_\_", "Author: \_\_\_\_\_", "Edition: \_\_\_\_\_", "Quality: \_\_\_\_\_", and a box at the bottom labeled "ESTIMATE VALUE".

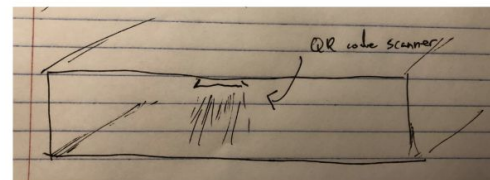
Input Basic  
Book Info

A hand-drawn form on lined paper with a black border. It contains the text: "Our Offer!", "\$12", and two buttons labeled "Accept" and "Decline". There is a small circle at the bottom center.

Printed  
out QR  
code



The secure book box

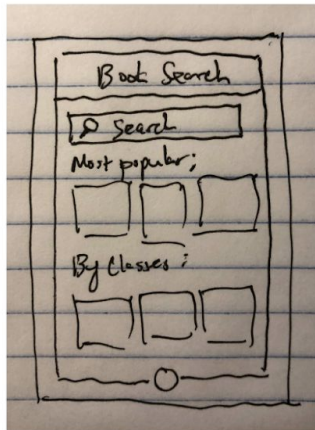


QR code scanner in book box  
opening

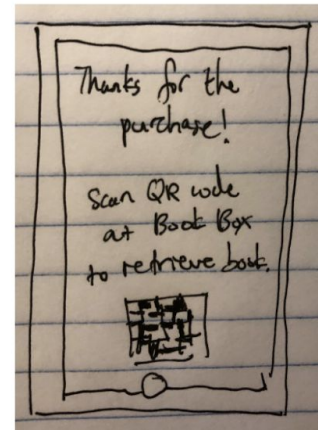


### Designs for buyer side

\*\*High level design only. Will work out details if we continue to pursue this design



Payment made through app after book is chosen

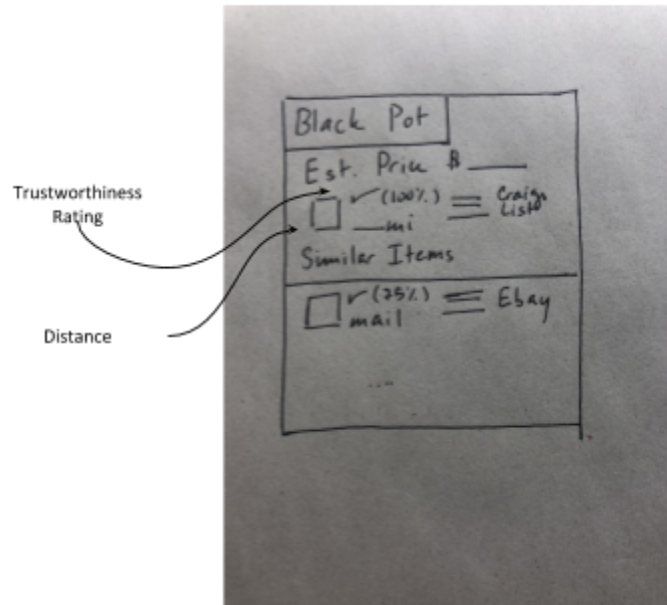


### *Design 3*

The third design is an internet browser plugin that scrapes existing reuse listings (eBay, Poshmark, ThredUp). If the user is about to buy a product on a retail site, the plugin alerts the user with alternative listings of second-hand items before the user decides to pay for a new product. The application would show the exact item, if such a listing exists, or similar items. When browsing on sites that are not dedicated to retail, the plugin will show similar item listings to the information presented on the existing page, but it will not actively notify the user. All of that allows for item discovery. The user will be able to sort and filter by several categories - product quality (poor, fair, excellent, etc) and distance to the user's location (for items posted on Craigslist that require pickup, this is extremely relevant). Each of the listings will be accompanied by a trustworthiness rating. That will help with evaluating trustworthiness. There will be an estimated price to give the user an idea of how much to pay.



A. Plugin icon will notify the user when there is a used item listing for an equivalent item.



B. When the user clicks on the icon, a window opens up with listings for used versions of the item & for similar goods.

## 8) Chosen Design & Tasks

After much thought, we decided to go with design number two. Our design enables users to instantly sell clothes and university books without the hassle of needing to craft a listing, field questions from potential buyers, coordinate the pickup or handle mailing. All someone needs to do is provide some basic information on the books or clothes, agree to the application's automated price offer, stick a QR code onto each item, and drop the items off into our local secure box. The box greatly eases the task of item transfer. The seller gets paid a low flat rate based on our pricing algorithm and an additional percentage when the item is sold. If items are not sold after a certain period of time, they are donated. On the buyer side, we provide a mobile app that is focused on universities, where students can easily find used books and clothes. It integrates with a user's social network, providing a community-based experience where they can receive recommendations from friends and see what they are browsing and buying. Users will also be able to search for books based on class number and university, and this helps with the task of item discovery.

## 9) Written Scenarios

### *Seller Scenario:*

Jamie is studying economics and global affairs. She's really busy because she's taking five courses in addition to being president of her sorority. She has way too many books that she needs to get rid of before she flies home for the summer. They're too expensive and heavy to ship. She knows that students next year will probably need the same books but she finds it inconvenient to figure out which students will be taking those courses next year. She's thought about donating the books to a library, but she'll need a car to get there. In addition to books, she has some clothes she wants to get rid of. She's aware of the problem of clothing waste and wants to find someone else who might benefit from them. She buys a new dress for each sorority formal, and she would like to sell because they weren't cheap when she first bought them.

Fortunately, she recently found a new service called reJoy through her university bulletin. To first handle the books, she opens the app, logs in through her Facebook account, and taps on selling "Books". She's asked to paste the url of amazon page corresponding with the book or type in the ISBN number, report the quality by selecting between three levels of quality, and taking a photo of her book. The app cross-references pricing through various sources and produces an offer based on a pricing algorithm. Less than 5 minutes later, she's created listings for all of her books. She hits the "print" button and tapes all those QR codes onto her books. She's offered a base fee of 10 dollars per textbook. She accepts the offer, and is then asked by the application to print out QR codes for each of her book.

Next, she goes through the same process with her clothes but instead of specifying an Amazon URL or ISBN number, she simply types in the brand, specifies how often it's been worn, and selects the type of clothing. She folds her clothes up and places each article in a zip-lock bag or plastic bag along with the QR tag. This entire process takes her about 15 minutes, and she walks 5 minutes to her campus reJoy Box where she drops off her books and clothes. She smiles as she walks back to her dorm, knowing that her items will get a second life and she just made some extra cash, all in under twenty minutes. A couple of weeks later, she receives a notification that her Biology textbook has been sold, and she's had an extra bonus of 20 dollars deposited in her account. Smiling, Jamie thinks about what price her prom dress will fetch on the platform.

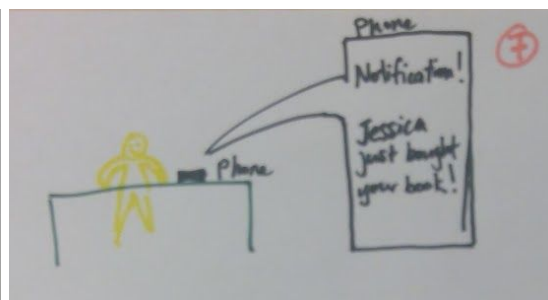
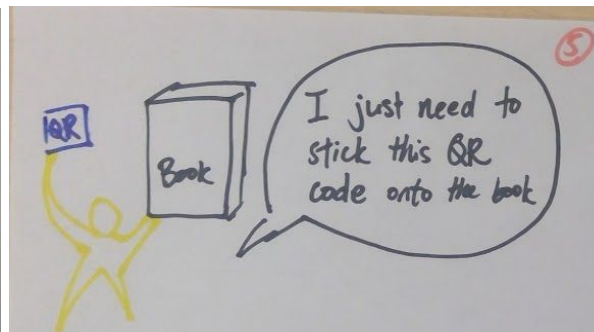
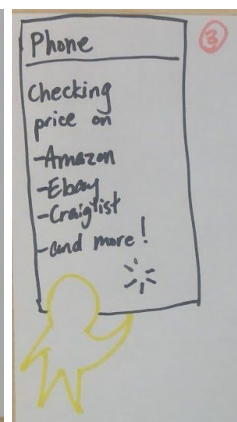
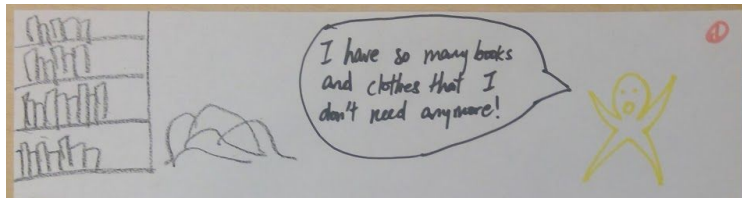
### *Buyer Scenario:*

Jessica is a senior college student at a large university in a big city. She loves making a big bang with her diverse outfits. There's a retro-themed costume party coming up and she needs an outfit. She's quite cash-strapped and works a part-time job, so she doesn't want to spend too much on an outfit she'll probably only wear once. Her friends have told her about the reJoy app, so she opens it, logs in with her Facebook profile, and clicks the "marketplace" button. She clicks the "women" category and then the "vests" category in addition to specifying the size she's looking for. She sees a wide array of cool vests at reasonable prices. She also sees her Facebook friends' activity such as what they've looked at or what they've recently purchased. She finds the perfect vest for this party, and makes a payment through her credit card. Within 7 days, the vest arrives!!! She's so happy with her experience using this app, she

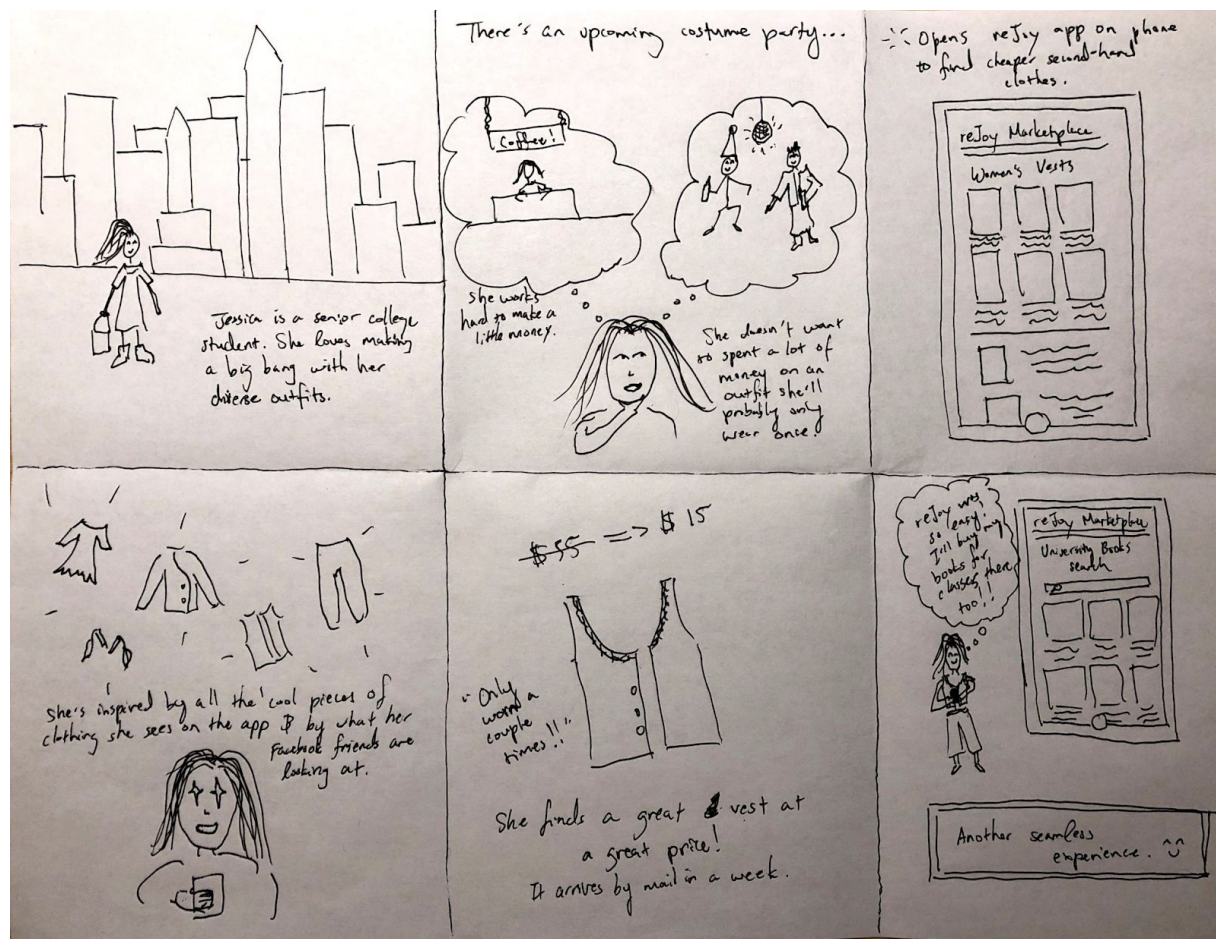
decides to use it to purchase textbooks on it as well, where she's able to specify which university she's at and the course number, and find the right books in no time!

## 10) Storyboards of the Design

*Seller side:*



Buyer side:



Key of text in case it's difficult to read:

1. Jessica is a senior college student. She loves making a big bang with her diverse outfits.
2. There's an upcoming costumer party... She doesn't want to spend a lot of money on an outfit she'll probably only wear once. She works hard to make a little money.
3. \*Opens reJoy app on phone to find cheaper second-hand clothes.
4. She's inspired by all the cool pieces of clothing she sees on the app & by what her Facebook friends are looking at.
5. She finds a great vest at a great price! It arrives by mail in a week.
6. \*Thought bubble - "ReJoy was so easy! I'll buy my books for classes there too!!" Another seamless experience.