

# College Student Backpack Experience

## Final Report

Sharon Heung | HCDE 313

### Goal & Context

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Backpacks have become a common staple for the average student with 79 million students carrying a backpack in the US (Bethesda, 2016). Considering the consumer demand of backpacks, this study explores how we can design a better backpack by accommodating for student's possessions, improving the overall backpack experience for college students at the University of Washington (UW), Seattle.

Originally during field work, the general design question on how to improve the overall backpack carrying experience was being explored. However, after conducting field work, many of the observations include student interactions with their possessions and their backpack. This is reflective in the field study findings, which include observable behaviors and pain points like untangling earphones, frequent usage of laptop compartment, and versatile use of side compartments. The field work findings shifted the study to focus on designing a better backpack by accommodating for student possessions. To understand the thoughts and feelings towards these findings, semi-structured interviews were conducted. Through interview work, pain point of tangled earphones was confirmed with interviews stating that untangling earphones is "a time investment and nuance" and "it's distracting. Another pain point revealed in the findings is constricting side compartments with a participant claiming their side compartments are "the most annoying because they are not stretchy". Additionally, the frequent usage of laptops was verbally confirmed in all interviews. Based on all the findings discovered in field work and interviews, it was important to understand if the findings are generalizable to the student body at the University of Washington. By creating surveys, I could confirm and reject findings established and address a limitation during my interviews, which was the small sample size of three participants. The survey addressed research questions including what current backpack preferences are, which backpack compartments are used most frequently, and if untangling earphones is a frustration for UW students. The survey created was influenced by the previous findings, asking responders to explore, elaborate or confirm on my existing findings that involve behaviors and pain points. By conducting field work, interviews, and surveys, findings will be more credible and detailed, influencing actionable recommendations that address the design question at hand.

## Method

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This research study consisted of field work, interviews and surveys with their own respective methodologies, but the same inclusion/exclusion criteria. Participants must be current UW students within the ages of 17-34 and frequently use a backpack; therefore, excluding non-UW students and students that carry a tote or other type of bag that is not a backpack.

### **Field Work**

Field work included three 30-minute structured observation field sessions at different UW locations: Suzzallo Graduate library, HUB, and the Odegaard Undergraduate library. Structured observations enabled detailed qualitative data and fits the feasibility of this study as a low resource method. I recorded observations by using digital and physical note-taking activities to account for fast note-taking and quick sketches. For analysis, I used my field notes to create an affinity diagram, organizing data into meaningful categories.

### **Interviews**

Three participants experienced a semi-structured interview for 30 minutes. The semi-structured interview method allows for planned questions creating consistency for higher quality data analysis, while also being flexible to ask follow-up questions. Due to time constraint, convenience sampling was used, meaning participants were directly recruited based on meeting the criteria, access, and convenience. Interviews took place on and off campus wherever the participant preferred. For data collection, I digitally took notes during the interview and participants consented to audio recording and pictures of their backpack. The interview transcription and notes were coded and then analyzed via thematic analysis to see themes and trends across all interviews.

### **Surveys**

The survey was created on Google Forms, because of my personal experience with this cost-effective online platform. Using snowball sampling, qualified participants were directly messaged and asked to send the survey link to two other people. The survey included questions ranging from demographics to questions on their backpack preferences. For analysis, I conducted quantitative analysis of the results using Google Sheets to see frequency of certain answers and cross-reference answers of different questions to validate or reject existing findings.

## Key Findings and Recommendations

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The three key findings presented relate to a pain point or behavior in the student backpack experience that was seen across field work, interviews and/or survey results shown in Figure 1. The findings are presented in order of prioritization based on relevancy to a user pain point and frequency.

Field Study Findings	Interview Findings	Survey Findings
Process of untangling earphones	Tangled earphones	Waterproof
Frequent usage of the backpack laptop compartment	Constricting side compartments	Frequent usage of laptop and side compartments
Versatility of the side compartments	Frequent Usage of a laptop compartment	Satisfaction level of storing and retrieving earphones

**Legend:**

Pain Point

Preference

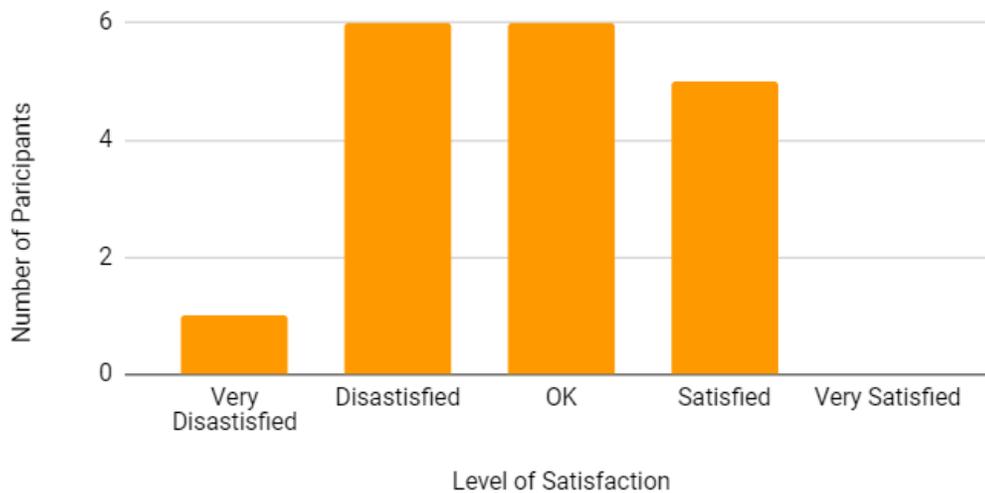
Behavior

Figure 1: Summary of the findings discovered categorized by source, including pain points, preferences and behaviors of the student backpack experience

**1. Tangled Earphones**

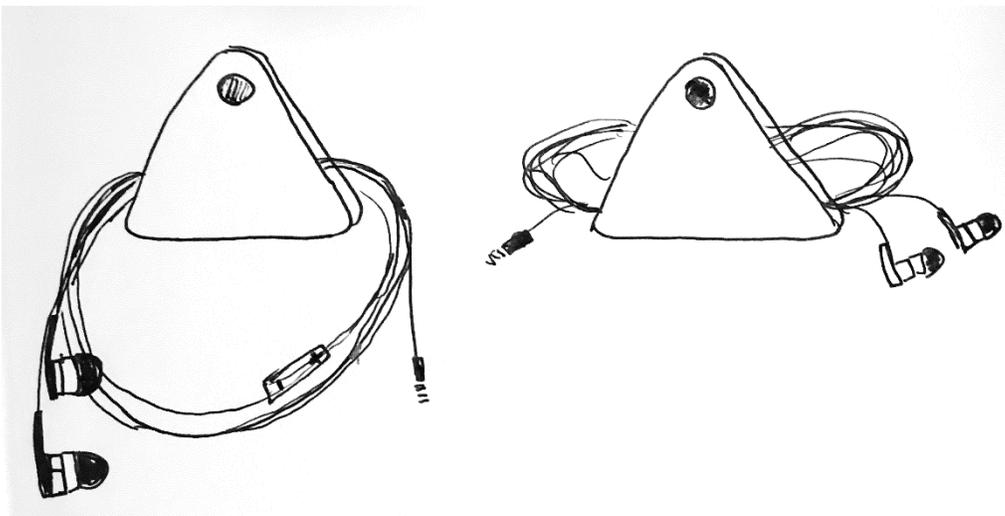
Observed in field study, verbally confirmed in interviews, and supported by survey results, tangled earphones were experienced by participants across all studies and confirmed to be a pain point in interviews and the survey. In field work, students were observed pulling out tangled earphones from their backpack, resulting in the student spending time untangling earphones. For instance, a student stood up and placed her backpack on the table. The student pulled out tangled earphones from her backpack, spending around five seconds untangling the earphones before putting them on and walking away. During interviews, two of the participants confirmed an experience with tangled earphones from their backpack. More specifically, one participant said “I feel like they [earphones] are more tangled from my backpack than my pocket”. When asked where they keep their earphones, the participant responded saying “see that’s the other thing is there’s no good spot”, showing frustration on the lack of a design feature. That same participant explains tangled earphones in their backpack “makes it easier to damage them because I’m pulling on the string”. This participant expressed dissatisfaction of not having a place to put their earphones and a pain point in damaging their earphones when pulling them out of their backpack. Another participant details that “it’s distracting when I have to look down and not be aware of my surroundings, while I try to get these headphones untangled”. This participant further points out that “it’s kind of a time investment and nuance”, again highlighting untangling earphones as a pain point. This finding was confirmed in the survey with 18/21 participants had experienced tangled earphones from their backpack and of those only 5 were satisfied with their experience seen in Figure 2. This finding is considered greatest priority because it is a user pain point seen across multiple studies. Additionally, since the pain point is due to lack of a feature, addressing this problem will be the most impactful in improving the backpack experience.

## Level of Satisfaction When Storing and Retrieving Earphones in Backpack of Those Who Have Experienced Tangled Earphones



*Figure 2: Bar graph of survey results relating to the level of satisfaction experienced when storing and retrieving earphones*

This report recommends a design feature that prevents tangled earphones. More specifically this report recommends a tangle-free earphone holder to coil their headphones and place them in holder that wouldn't allow the headphones to uncoil. The simple design of a clasp or hook can also enable the student to decide how to use it based on how they fold/coil their earphones seen in Figure 3.



*Figure 3: Sketch of a tangle-free earphone holder*

## 2. Constricting Side Compartment Usage

All three studies had a different finding relating to side compartments, but two of the findings support the key finding of constricting compartment usage. During the field work, the side compartment on a backpack (see Figure 4) was observed to hold multiple types of possessions, including bottles, wallets, papers, and phones. I observed the usage of the side compartments, but more specifically the versatile usage. The frequent usage of the side compartment was further confirmed in the interviews and surveys. All interviewees had and used side compartments. In the survey results, majority of the participants who had side compartments stated that they “always” use it and no participant who had side compartments “never” used it shown in Figure 5. In fact, only one survey responder did not have side compartments explained that they “wish it had side compartments” to put “water bottle and other stuff in them”. Again, this emphasizes the frequent and versatile usage, stressing the importance of having a side compartment.

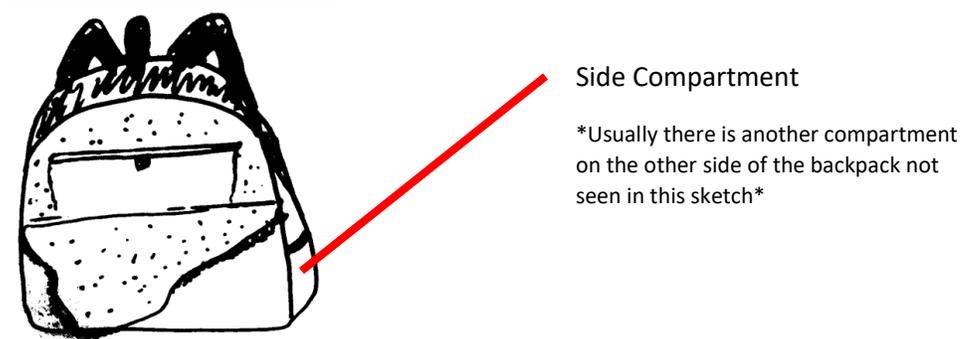


Figure 4: Labelled sketch of the side compartment seen in a typical, opened backpack

With the findings of frequent and versatile side compartment usage, these findings supported the rationale of another finding related to a pain point in the side compartments discovered during interviews. During the interviews, two out of the three participants suggested improvements on their existing backpack side compartments by increasing elasticity based on their current frustration towards their constricting side compartments. One interviewee explained that if “the side pockets were more size adjustable than I feel like I can depend on them a little more”. Another interviewee refers to the side compartments as “the most annoying because they are not stretchy”. This participant verbally states frustration, explaining “it’s nearly impossible to fit anything” into the side compartments. This pain point was revealed in a short answer survey question several times with a responder explaining that they “elastic and some kind of stretchy fabric”. The versatile usage of the side compartment logically supports the pain point of constriction, since different sized possessions are being placed that may not fit the existing design. The pain point of constricting side compartments is the key finding,

since it is supported by different findings. Although, constricting side compartments were a frequent user pain point, it has middle priority since the design feature already exists, making the recommendation not as impactful as the first finding.

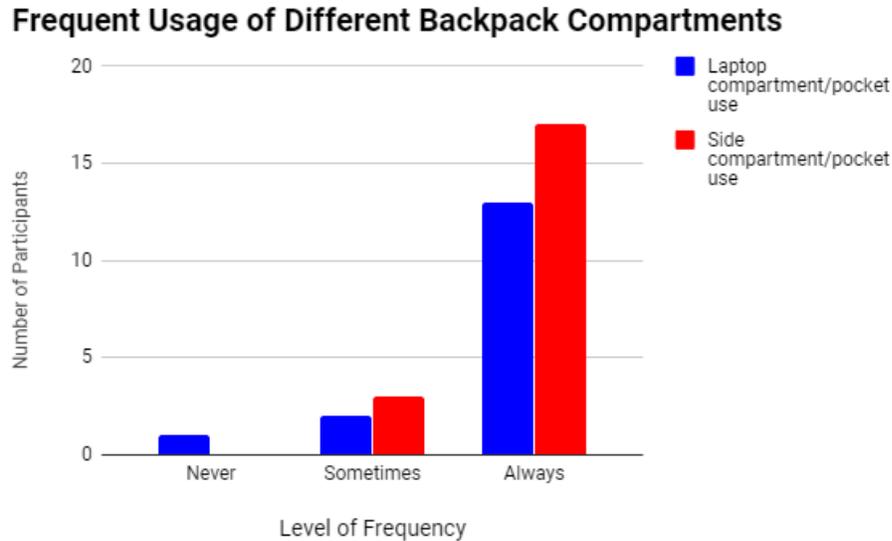


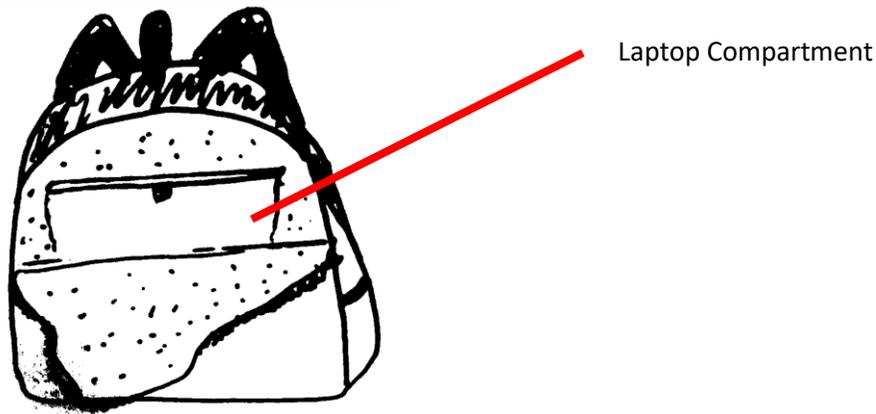
Figure 5: Bar graph of the frequency of the laptop compartment or side compartment experienced by the survey participants

Because of this finding, this report recommends increasing the elasticity of the side compartment as suggested by participants. This not only will make the side compartment size adjustable but will also increase usage by allowing for items to fit in the side compartments. Also creating elastic side compartments accommodate for a diverse range of objects from earphones to water bottles seen during the interviews

### 3. Frequent Laptop Compartment Usage

Across all three studies, frequent laptop compartment usage was considered a key finding. This finding was first introduced in field work, observing students placing laptops in the laptop compartment (see Figure 6). During interviews, all participants verbally acknowledged the frequent and consistent usage of the laptop compartment as well as the importance of protecting their laptop. Each participant carried a laptop in their backpack, categorized the laptop as a “key essential” and uses a laptop compartment, isolated from the rest of their backpack possessions. One participant explains “the one I use the most frequently is my laptop compartment” because “it protects it so it doesn’t get damaged”, showing the frequent usage of this design feature compared to other features in their backpack and the desire to protect their laptop. Frequent usage was confirmed a third time in surveys with majority using their laptop compartment “always” shown above in Figure 5. This finding is considered low priority because this finding

focuses on the frequency only and is not seen as a pain point in the experience, leaving little improvement of already positive design feature.



*Figure 6: Labelled sketch of the laptop compartment of a typical, opened backpack*

With the frequent use of the laptop compartment, this report strongly recommends including a laptop compartment as a design feature. To further improve this existing and popular feature, the compartment should be durable and padded, supporting the participant's frequent usage and desire to protect their laptop. Additionally, this would address one survey responders complaint on the "lack of padding in [their] laptop sleeve".

## Discussion

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Each finding related to a design feature and/or a possession involved in the student backpack experience. For the results, it is important to understand the strengths and weaknesses of this study. A strength in the results is that the key findings for each study was similar across field work, interviews, and survey results. This allowed me to confirm each key finding twice or even three times from different studies. With credible and strong findings, I was able to present actionable recommendations. Additionally, I never had shortage of qualified participants with most students carrying a backpack. This allowed me to maximize participants involved as well as maximize amount of observations taken and survey participants. However, it is important to note a limitation and weakness in this study, which is the lack of diversity of the participants. Observations during field work were limited to only three locations on campus. Additionally, for interviews and surveys, the methodology of convenience and snowball sampling limit to participants who I know and who know each other, constricting the diversity of groups of people. This was also shown in the demographic results of the survey, all of whom were full time students. Overall although the study was limited to students at UW and being a time-limiting and low resource research, the findings are credible and representative of the participants involved.

## Next Steps

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I would like to better understand untangling earphones and the level of frustration through interviewing. It was difficult to measure this in survey without the questions being leading, but interviewing allows me to ask follow-up questions that can explore how much of a pain point untangling earphone is, which was not explored in this research.

## Reflection

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Researching on the student backpack experience at first-glance seemed difficult in finding ways to improve a developed product that is already very popular. However, I was surprised to find pain points and findings that I could relate to, in hindsight. This made me realize that research can reveal interesting findings even in a product that is seemingly well-developed. Another lesson I learned when undertaking this research that it is okay and advantageous to change and augment the design question based on my results. I started this research on looking at the carrying experience and changed it to the overall experience focusing on design features and possessions. Without changing my design question my findings would not be as meaningful and impactful as they are now. This worked well especially since after augmenting my design question, the findings were similar across all field work, interviews, and the survey, allowing for strong and credible findings. Next time, I would try to do more random sampling to address the limited diversity in participants. I think this could highlight and reveal other interesting responses and findings. Overall, this experience of doing three months research and conducting different studies and methodology has strengthened by user research skills and experience. Although my future profession remains unknown, I do know this experience can assist possible future positions like being a user research, marketing or UX design.

## References

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How heavy is your child's backpack? (2016). *The American Occupational Therapy Association, Inc.* Retrieved April 2, 2018, from <https://www.aota.org/Publications-News/ForTheMedia/OT-in-the-News/2016/092016-BackpackDay.aspx>.

## Appendices

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### Appendix 1: Planning Materials

#### Part A: Field Study Plan

# College Student Backpack Experience Field Study Plan

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## Goal

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Backpacks have become a common staple for the average student with 79 million students carrying a backpack in the US (Bethesda, 2016). Considering the consumer demand of backpacks, this study will explore how we can improve the overall backpack carrying experience for college students at the University of Washington (UW), Seattle, by analyzing backpack usage.

According to a Boston University study, 85% of American university students report backpack-related pain and discomfort (Preidt, 2017). With 23,000 backpack related injuries nationwide, backpacks currently are leading to health risks and development of long-lasting back pain, which can include symptoms like neck pain, headaches and muscle spasms (Foundation for Chiropractic Progress, n.d). Despite these potential effects, students still use backpacks for its functionality and backpacks remain a commonly used product. Doing field work will allow us to see why college students use backpacks and what they need in a backpack. With this data, backpacks can better accommodate for the college student's possessions, possibly reducing unnecessary material and thereby decreasing the physical stress on the student.

## Research Questions

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Below are a list of research questions, focusing on the who, what, when and why.

1. Why do UW students wear backpacks?
2. When and how are UW students wearing their backpacks?
3. Where do UW college students wear backpacks?
4. Where do UW college students place their backpacks when they are not wearing it?
5. What are possessions UW students store in their backpacks?
6. How do UW students compartmentalize and organize possessions in their backpacks?
7. Who wear backpacks and who don't?
8. Why do some UW students don't wear backpacks?
9. What are current pain points UW college students have with their existing backpacks?
10. What are current backpack preferences for UW college students?

## Participants

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The participants of this study will be University of Washington undergraduate or graduate students. The mandatory participant characteristics include students who carry a backpack, appear to be within the age range of 17-34. and are physically located on-campus. Participants that fit the characteristics will be recruited at specific locations where students typically congregate, including the Odegaard Undergraduate Library, Suzzallo Library and the HUB. For

the purposes of this study, there will be no interaction with the participants and activities during this study will only be structured observation.

Focusing on ethical considerations, this field study will be performed in public areas during public hours. This study will detail participants backpack and their possessions, making it crucial for the participants to be anonymous with no ability to trace the participant’s identity. To ensure this, there will be no information or details about the participant themselves. Additionally, any photos taken will not be shared and instead used as a reference to clarify notes taken during the study. Afterwards, these photos will be deleted to further ensure anonymity of the participants.

## Method

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This field study uses the method of structured observation, concentrating on ten areas of focus outlined in Courage and Baxter. Throughout this study, there will be a total of three 30-minute field work sessions that will follow the workback schedule and protocol discussed below.

### Areas of Focus

<b>Focal Point</b>	<b>Relevant Questions/Statements</b>
<i>Family and Kids</i>	Not applicable – participants will not be family or kids
<i>Food and drinks</i>	What food and drinks do students carry in their backpack? What types of food and drinks do students typically buy on campus? How do backpacks currently accommodate for food and drinks?
<i>Build Environment</i>	Where are the backpacks being hung/set down/placed throughout the UW campus? How are backpacks being placed when they are not being carried?
<i>Possessions</i>	What kind of possessions do students carry? Is there a trend of the type of possession and placement in the backpack? Do students prioritize some possessions over others?
<i>Media Consumption</i>	Are students using media with their backpack on? If so, what are the different types of media consumption?
<i>Tools and technology</i>	What tools and technology do students carry? What are the most common tools and technology in student’s backpacks? What tools and technology are built into the backpack itself?

<i>Demographics</i>	Who are the students using backpacks? Who are the students not using backpacks? How do students with backpacks interact with each other?
<i>Traffic</i>	What is the flow of traffic through the environment and how does the backpacks play a role? Are students carrying backpacks seen in high traffic areas or low traffic areas?
<i>Information and Communication Access</i>	Not applicable – does not involve or affect the carrying experience of backpacks.
<i>Overall Experience</i>	What is the overall experience like for students? Are there standards or behaviors of how students interact with their backpack? What rituals do students have involving their backpack?

**Overall Session Logic**

The three 30-minute field sessions will take place on public property on the University of Washington Campus. More importantly, the sessions will be done at locations where students typically interact or carry their backpack, including areas where students take possessions out of their backpack or put possessions in their backpack. Each observation sessions will be done at different locations: Suzzallo Graduate library, HUB, and the Odegaard Undergraduate library. The variety of locations will encourage diverse students of different ages, including both graduate and undergraduate library. To maximize the recruitment of participants and quality of my observations, these sessions will be done sometime between Monday – Thursday and after 9:30am and before 4pm, which are common times that students will be at these locations. Typically, Fridays and weekends, students have more social events and are less likely to be on-campus.

Each 30-minute field session will follow the following *protocol*:

Getting Ready

In getting ready, I will make sure to be well-rested and well-nourished before the day of the field study. Additionally, I will remember to charge devices like my laptop, which will be necessary for data collection. To prepare my materials needed, I will create a checklist, which will include laptop, laptop charger, notebook, pen/pencil, and check off the list as I begin to pack my materials. In order to blend in and lay low during the study, I will plan to wear dark clothing and bring a backpack myself. To allow ample time and to anticipate any unforeseen challenges along the way, I will remember to arrive 15 minutes early before conducting the 30 minutes structured observation.

### Getting Started

Once I am at the site of the field study, it is time to get started. First, I will remember to observe my location and begin to recruit participants. Once the participants have been spotted, I will find a strategic spot to sit and observe. Ideally, this spot will be in the corner or sides to maximize my field of vision and view of the participants. After finding the exact location I will observe from, I will allocate 5 minutes to set up my materials. I will set up the materials by opening necessary documents on the laptop for quick access and have a notebook and pen in front of me. I will remember to take photos from my location for reference. Before starting the session, I will set a timer for 30 minutes on my phone on vibration, drawing less attention. I will quickly review the areas of focus to better ensure I cover all focal points and have this information up on my computer for easy access during the observation.

### During Structured Observation

During the session, I will remember to observe elements that fall within the areas of focus, but also not limit my observations to the list. I will remember to type observations of the recruited participants and sketch any depictions or illustrations that would be hard to depict digitally. If needed, I will remember to take photos as a quick way to collect data and translate later. I will remember to glance at the focal points if I feel stuck or notice a decrease in productivity. Furthermore, throughout the entire structured observation, I will remain mindful and respectful of others around me.

### Ending the Session

At the end of the session, I will turn off the timer. I will remember to finish writing down any remaining thoughts and remember to save all documents edited. Skimming through my observations, I will remember to review my notes to ensure I have addressed all focal points. If I am unsatisfied and notice gaps in my observations I will extend research time. Additionally, at the end of the session I will mentally reflect and check in with myself that I have focused on the “big picture” as well as the focal points.

### Wrap-up

To wrap up the session, I will remember to review and clean up my notes directly after. This includes correcting lingo/phrasing that could be confusing and organizing my notes to be easily read later. I will refer to any photos taken and translate those into written descriptions or observations. Immediately after, I will remember to delete the photos taken during the session. Lastly, I will remember to save all documents and place all materials back into my backpack.

## **Work Back Schedule**

This study will follow the work back schedule listed below.

	MON	TUES	WEDS	THURS	FRI	SAT/SUN
APRIL	2	3	4	5	6	7/8
		Field Plan Due 11pm				
	9	10	11	12	13	14/15
	Conduct Field Session #1	Conduct Field Session #2 & #3	Clean up notes and analyze data		Write Report	
	16	17	18			
			Field Report Due at 11pm			

### Data Collection

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For data collection, I will use both digital and physical note-taking activities. For observations easily recorded through words, I will use my laptop. Typing my notes will allow me to detail more observations more quickly than handwriting, maximizing the amount of data written during the field study. Additionally, having a computer in front may be less conspicuous to others that I am taking observation notes, reducing the likelihood of the Hawthorne Effect. However, I do recognize the benefits of handwriting notes and sketching. Therefore, I will have a notebook handy for any sketches or layouts about the environment that will be beneficial. Furthermore, during the beginning of the session I will take a photo for reference and may take photos during the session. Photos are a rapid way of capturing an observation very quickly. Photographs will be used to translate into verbal data and deleted afterward for participant confidentiality and anonymity.

### References

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How heavy is your child's backpack? (2016). *The American Occupational Therapy Association, Inc.*

Retrieved April 2, 2018, from <https://www.aota.org/Publications-News/ForTheMedia/OT-in-the-News/2016/092016-BackpackDay.aspx>.

Preidt, R. (2017, September 13). Majority of College Students Report Backpack-Related Pain. Retrieved April 2, 2018, from <http://abcnews.go.com/Health/Healthday/story?id=5789534&page=1>

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## Part B: Interview Plan

# College Student Backpack Experience Field Interview Plan

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## Goal

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Backpacks have become a common staple for the average student with 79 million students carrying a backpack in the US (Bethesda, 2016). Considering the consumer demand of backpacks, this study will explore how we can improve the overall backpack carrying experience for college students at the University of Washington (UW), Seattle, by analyzing backpack usage. After doing field work, many of the findings involved student possessions that were in their backpack, including findings that highlighted flaws in the design of the backpack. This was seen through observing student's untangling earphones and student's struggling to fit their laptop with a case in the laptop compartment. These behaviors show inefficiency and a pain point in the backpack experience. Other observations include specific trends like the versatile usage of the side compartment. Overall, with the structured observation field study, the findings included detailed recording of visible possessions and student's interactions with these possessions; therefore, affecting the key findings from the field study.

With the field study in mind, this interview study will further explore the student backpack experience by focusing on possessions and design features. By doing interview research on possessions and design features, I can further understand backpack preferences and pain points, which can be informative in improving the overall experience. Ultimately, this study can help

identify common possessions and the needed design features to accommodate for these possessions, eliminating pain points and improving efficiency.

## Research Questions

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Below is a list of refined research questions:

11. What possessions do students store in their backpacks?
12. How do UW students compartmentalize and organize possessions in their backpack?
13. Why do students place possessions in specific compartments or areas in their backpacks?
14. What are current pain points students have when they take out possessions or put in possessions into their backpack?
15. What are current backpack preferences/preferred backpack features for UW college students?

## Participants

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The participants of this interview study will be University of Washington undergraduate or graduate students. The mandatory participant characteristics include UW students who carry a backpack, who are within the age range of 17-34, and who spend time on the Seattle UW campus. Participants must own and use a two-strap backpack, excluding totes or purses. After all the product being researched is a two-strap backpack. Furthermore, participants must spend time on the UW Seattle campus to remain consistent with the previous field study. However, where students specifically use their backpack is not within scope of this interview study, excluding the environment and focusing mainly on possessions within the backpack.

Due to the time constraint of this study, convenience sampling will be used, meaning that participants will be directly recruited based on access and convenience. I will contact a population of qualified students by messaging them, asking if they would be interested, and requesting for consent. A message briefly describing the study, the time commitment, and implications of the results will be sent to all the pool of qualified participants. Three participants will be chosen based on their availability to fit my schedule and timely response. The number of people contacted will increase until three participants schedule and confirm for an interview. The interview will take place on-campus in hopes that the participant will already have their backpack, consenting to bringing their backpack to the interview. More specifically, the interview will be conducted in the HUB or Allen Library, allowing for a quiet enough to listen as well as an environment that permits talking.

## Method

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Each participant will be asked to participate in a 30-minute interview session, following the semi-structure interview approach. Incorporating the semi-structured method allows for planned questions asked across all participants. This consistency can improve the quality of data analysis. In addition, this method gives flexibility to also ask follow-up questions, allowing for more discussion on intriguing responses or clarifications. For instance, if a student mentions that they use their backpack, because it is convenient. I can ask a follow up question on what exactly makes their backpack convenient, allowing insight on the participant's values and feelings as well as highlighting possible features that make the backpack convenient. Furthermore, a field observation study only allows for visible observations and conducting interviews can enable me to better understand students backpack preferences and interaction with their possessions through storytelling and in-depth responses. Ultimately interviewing can provide insights, thoughts, feelings, and opinions about observations seen in the field observation study. This can allow me to confirm pain points and possibly discover new pain points. Understanding preferences and pain points are essential to addressing the design space of improving the overall backpack experience.

The interview will start out with an introduction/welcoming conversation. This will allow the participant to feel more comfortable, encouraging thoughtful and honest response. This includes questions like asking how there day is going so far or possibly an introduction on who they are and where they are from. Afterwards, I will transition the conversation on the topic of school, creating a smooth transition to talking about their backpack. I will reiterate the purpose of the study, their anonymity, time commitment (when the interview will be over), and then ask for consent to take photos of their backpack before asking questions. I will also ask for their consent to record audio of the study and for photos to be taken.

After the introduction is over, I will begin to ask questions prepared. The sequence of the questions are intent questions, specific questions, and validation questions. This logic allows for the participant to first answer broad overarching questions and then answer specific questions. Not only does this ease the participant into the interview, but also simpler questions in the beginning can help the participant feel more comfortable and less nervous. After asking intent questions on the reasoning why they use a backpack in the first place and their background on how they got their backpack, the questions become more specific. These questions address specific possessions they carry and what features of their backpack they like or dislike. Additionally, if the participants consent to bringing their backpacks to the interview, I can observe how they interact with their possession as well. Asking these will allow me to learn what possessions they carry and understand preferences and pain points. At the end of the interview, the questions transition to validation questions. These validation questions are influenced by my findings in hopes of better understanding thoughts and insights that cannot be done through observation. Also, the validation questions can help me confirm or reject my observations.

After all the core questions have been asked, I will ask the participant if they have anything else they want to add or any questions they have. Then I will thank them for their time. Once the participant has left, I will clean up my notes right after the interview, which include fixing typos and correcting spellings. Afterwards, if applicable, I will listen to the audio and look at my note, which will allow me to include quotes or any missing content.

Throughout this process of the interview, I will keep in mind the biases at play. Because of the recruitment approach of convenience sampling, most likely I will personally know these participants. This means I must consciously remove my own pre-notion assumptions. This can be mitigated by carefully constructing unbiased questions and being aware of leading questions which questions are built upon assumptions. Additionally, verbally repeating back key points the participant mentions before asking the follow up question will allow me to really focus in on specific things said, removing my own existing assumptions or judgements. Another type of bias that can occur is interviewer prestige bias, which is when participants are informed about what other people think, especially people of authority. This can create bias in what the participant feels like they should say. Ultimately, I can reduce this bias by not mentioning my own opinions or other people's opinions about backpacks.

## Questions

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Each 30-minute interview session will be asked the following questions. Each question is supported by a rationale and includes possible follow-up questions. Before asking these questions, I will clearly explain to the participant that they can “opt out” of a question if they wish.

1. Why do you use your backpack?
  - a. **Rationale:** This simple question eases the participant into the interview and reveals the participant's objective of using a backpack. I can gain insight on why the participant uses a backpack versus other products.
  - b. **Follow Up Questions:**
    - Why not a tote/bag (or other carrier) to carry your belongings?
    - What makes a backpack convenient?
    - When would you use a backpack? When would you not use a backpack?
2. How did you end up with the backpack you have today?
  - a. **Rationale:** This can reveal context behind the participants backpack choice and the background of how they got their backpack. I want to learn more about their thoughts and insights when choosing a backpack, which could highlight their preferences in a backpack.
  - b. **Follow Up Questions:**

- What made you decide to buy this backpack and not the other backpacks at the store or online?
  - Are you satisfied with your backpack choice? Why?
  - Are you unsatisfied with your backpack choice? Why?
3. Walk me through what is in your backpack.
- a. **Rationale:** This provides data on what is in their backpack and where it is located. I want to learn more about what possession the participant carries, their thoughts on the possessions and their rationale on how they organize their backpack.
  - b. **Follow Up Questions:**
    - How often do you carry this possession?
    - Why do you place that item there/in that compartment?
    - What do you use this item for?
4. Is there anything you like about your backpack?
- a. **Rationale:** This question asks about the participants insights on existing design features. I want to understand what features contribute to a positive backpack experience.
  - b. **Follow Up Questions:**
    - Why do you like that?
    - What makes this feature convenient?
    - Can you tell me a time when that feature was useful?
5. Is there anything you dislike about your backpack?
- a. **Rationale:** This question is the opposite of the previous question, allowing for the participant to explain pain points. I can learn what areas need to be improved and ask their opinion on possible ways for improvement.
  - b. **Follow Up Questions:**
    - Why do you dislike that feature?
    - What would make that feature better?
    - Can you tell me a time when that feature was inconvenient?
6. Have you ever carried headphones/earphones in your backpack?
- a. **Rationale:** This question is a validation question influenced by my findings of untangling headphones as a possible pain point. Additionally, this can help include possible insights or opinions about untangling headphones, allowing me to either support or reject my findings.
  - b. **Follow Up Questions:**
    - Where did you put your headphones/earphones?
    - Can you tell me about a time when you did take out earphones or place earphones into your backpack?

- Why don't you carry headphones/earphones in your backpack?
7. Have you ever used a laptop compartment in your backpack?
- a. **Rationale:** I want to learn more about insights and thoughts on the finding of the laptop compartment being a pain point. This can confirm or deny my recommendations as possible ways to improve the backpack experience
  - b. **Follow Up Questions:**
    - How often do you use this compartment?
    - Why do you use this compartment?
    - Can you tell me about a time when you did use this laptop compartment?

### Work Back Schedule

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This interview plan will follow the work back schedule listed below.

	MON	TUES	WEDS	THURS	FRI	SAT/SUN
APRIL		24	25	26	27	28/29
		Interview Plan Due 11pm	Recruit Participants		Conduct Interviews (includes cleaning up notes)	
APRIL/MAY	30	1	2	3	4	5/6
				Analyze data		Write Report
	7	8	9			
			Interview Report Due 11am			

### Data Collection

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For data collection, I will be digitally taking notes. If the participant consents I will also record audio, and capture photos of their backpacks. Digital notes allow for me to easily type and engage in eye contact. Active listening body language is important for the participant to feel

heard, which is hard to do when manually taking notes. Additionally, before conducting the interview. I will have a premade document with the questions already typed out. This way I maximize my time during the interview to only take notes of what the participant is saying and having a premade document also makes organization of the notes easier to understand afterwards, which can help data analysis later. If the participant consents in audio recordings I will only begin the audio when the core questions are being asked. Afterwards I will stop the audio once the participant leaves. The audio will be used to add on quotes or content into my notes. Another element of the data collection are photos. Photos will be taken of their backpack and of the inside of their backpack if the participant consents to it.

Thinking about privacy and ethical considerations, the audio will be deleted immediately after it has been transcribed into my existing digital notes. Additionally, because I will take photos of the participant's backpack, I will ensure that my notes do not reveal the gender or any identifiable qualities/features of the individual. It is up to the participant if they wish for the photos to be revealed in the report. If there's any personally identifiable information in the photos they will be cropped or not included as data available to the public.

## References

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How heavy is your child's backpack? (2016). *The American Occupational Therapy Association, Inc.* Retrieved April 2, 2018, from <https://www.aota.org/Publications-News/ForTheMedia/OT-in-the-News/2016/092016-BackpackDay.aspx>.

## Part C: Survey Plan

# College Student Backpack Experience Field Survey Plan

Sharon Heung | HCDE 313

## Goal

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Backpacks have become a common staple for the average student with 79 million students carrying a backpack in the US (Bethesda, 2016). Considering the consumer demand of backpacks, observations from field work, and findings from interviews, this study will explore how we can improve the overall backpack carrying experience for college students at the University of Washington (UW), Seattle, by analyzing current backpack design features and backpack usage.

During field work, the general design question on how to improve the overall backpack carrying experience was being explored. Many observations included students interacting with possessions in their backpack like untangling earphones and struggling to fit their laptop with a case in the laptop compartment. These behaviors show inefficiency and a pain point in the backpack experience. Another observation includes the versatile usage of the side compartment of their backpacks, having observed a phone, wallet, paper, and water bottles being stored in this compartment. Due to the findings relating to a possible pain point, it was crucial to receive verbal confirmation of these findings as well as understand thoughts and feelings, which is why interviews were conducted. Since the recommendations and findings were related to possessions and design features, interviews were conducted with a augmented design question focused on how to better the backpack experience by better accommodating for possessions. Through interview work, pain point of tangled earphones was confirmed with interviews stating that untangling earphones is “a time investment and nuance” and “it’s distracting. Another pain point revealed in the findings is constricting side compartments with a participant claiming their side compartments are “the most annoying because they are not stretchy”. Additionally, the frequent usage of laptops was verbally confirmed in all interviews. Due to the findings relating to possessions and features, the new design question accommodates for this. With the limitation of only interviewing three participants, I intend on continuing my research by creating surveys. Surveys can help me confirm and validate my existing findings. Ultimately, this study can help confirm or reject my findings, understand the level of importance of each finding, and whether these findings are generalizable to student body at the University of Washington.

## Research Questions

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Below is a list of refined research questions:

16. How important is it for UW students to protect their belongings? (Elaborate)
17. How frustrating do UW students find untangling earphones from their backpack? (Elaborate)
18. What are preferred backpack features for UW students? (Confirm)
19. Wha compartments are used more often by UW students? (Confirm)
20. Which backpack preferences are most important for UW students? (Explore)

## Participants

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The mandatory participant characteristics include currently enrolled UW students who carry a backpack at least once per week. Participants that are not students at the UW or use their backpack less than once per week will be excluded from the study. To remain consistent with research done, students must be attending the UW. Additionally, students whom use backpacks less than one a week will be excluded due to the lack of frequent usage, which may affect the quality of their responses. After all the product being researched is a two-strap backpack.

However, where students specifically use their backpack is not within scope of this interview study, excluding the environment and focusing mainly on possessions within the backpack and their backpack experience.

In terms of recruitment, my plan is to directly contact a population of qualified students by messaging them on social media or email. I will then ask them to forward the survey to two other people, following the snowball sampling. I will be sure to keep track of the responses and if not, enough people are completing the survey I will contact another population of qualified students. Ultimately, this direct recruitment plan makes completing the survey more personal, increasing the likelihood of the survey being filled out.

Method: Question Rationale Analysis

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1. How are you affiliated with the University of Washington (UW)? (Select one)
  - Full-time student at the UW
  - Part-time student at the UW
  - Faculty or Staff at the UW
  - Not affiliated with the UW

**Rationale:** This screening question will allow me to find out if the respondent is a qualified participant and fits my inclusion criteria of being a student at the UW.

**Plan for Analysis:** Respondents who are not students will be excluded from the study. Part time versus full time students will be analyzed to see trends amongst different user groups.

2. How frequently do you carry your backpack? (Select one)
  - Never (0 days per week)
  - Rarely (1 day per week)
  - Sometimes (2 – 4 days per week)
  - Always (5-7 days per week)
  - Other

**Rationale:** To better understand the quality of data, it is important to ask respondents how frequently they use their backpack and if they use a backpack at all, which is an inclusion criteria.

**Plan for Analysis:** For this study, participants who never and rarely use their backpack will be excluded from the study, due to the infrequent usage and possible lower quality data. Additionally, frequency of using the backpack may affect the respondents answers later in the survey.

3. Where are you going when you carry your backpack? (Click all that apply)
- Class
  - Coffee Shop
  - Restaurant
  - Grocery Store
  - Shopping mall
  - Other: please specify

**Rationale:** This demographic question is asked to learn more about what purposes that backpack is being used for, which may affect the possessions stored in their backpack. This is crucial into understanding the context of the backpack being used.

**Plan for Analysis:** Participants whom use backpacks for different occasions may experience different pain points, preferences and priorities. For what reason the participant uses their backpack can be a way to organize the data with more context. I will cross reference these answers with the rest of the survey to provide context.

4. Rank the following backpack features from most important to least important.
- Laptop pocket/compartment
  - Waterproof
  - Side pockets/side compartments
  - Small pockets

**Rationale:** This question allows me to understand design preferences and prioritizations in relation to other backpack features. The laptop compartment and side compartment are two design features mentioned in my findings, understanding importance in relation can allow me to prioritize findings appropriately.

**Plan for Analysis:** Based on this question I can validate or reject the prioritization of my recommendations. This can be done by tallying and counting which feature was considered most important and which feature was considered least important across the respondents. Or perhaps, this question can emphasize the importance of other design features mentioned in interviews, but not included in the key findings.

5. How frequently do you use a laptop compartment or a laptop pocket in your backpack? (Select one)
- Never
  - Sometimes
  - Always
  - I don't have a laptop compartment/pocket

**Rationale:** This question directly relates to a previous finding of the frequent usage of laptop compartment.

**Plan for Analysis:** Based on this question I can validate or reject my previous finding of the frequent usage of the laptop compartment. This can be done by counting how many “always” use the laptop compartment out of the total respondents, calculating a concrete percentage on how many frequently use laptop compartments. This number can possibly confirm my finding and increase my confidence in my finding or reject my findings.

6. How frequently do you use your backpack’s outer side compartments/pockets backpack? (Select one)
- Never
  - Sometimes
  - Always
  - I don’t have a side compartment/pocket

**Rationale:** This question relates to a previous finding of the versatility of the side compartments. Asking the frequent usage will allow me to determine the prioritization of the finding as well as if this design feature is being used by the general population.

**Plan for Analysis:** By counting each response, I can have a concrete percentage on how many students in general used side compartments. Based on this question I can validate or reject a finding and recommendation involving side compartments as well as allowing for better prioritization.

7. What do you store in your side compartments/pockets backpack? (Check all that apply)
- Nothing
  - Water bottle
  - Paper
  - Headphones/earphones
  - I don’t have a side compartment
  - Other \_\_\_\_

**Rationale:** This question will allow me to validate or reject one of my findings of the versatile usage of side compartments.

**Plan for Analysis:** By tallying each rating, I can see the majority of people and percentage of respondents who agree with this statement. If majority agree that I can validate the finding of versatile usage of side compartments with greater confidence, if not than I can reject or assert lower confidence in this finding.

8. How often have you found your earphones tangled in your backpack?
- Never
  - Sometimes

- Always
- I don't store my earphones in my backpack
- I don't own earphones

**Rationale:** This question will allow me to validate one of my findings that tangled earphones are being found in backpacks as well as the frequency

**Plan for Analysis:** I will tally how many respondents respond to each and evaluate if I can reject or lower my confidence of the common pain point of tangled earphones.

9. I find storing and retrieving earphones in my backpack...

- Very dissatisfied
- Dissatisfied
- OK
- Satisfied
- Very satisfied
- Not Applicable

**Rationale:** This question will allow me to validate or reject if the action of untangling earphones is a pain point, whether that is a pain point due to time consumption or annoyance, which was mentioned in the interviews.

**Plan for Analysis:** I will analyze the responses by counting up how many respondents don't answer satisfied or very satisfied and compare it to how many respondents do answer satisfied and very satisfied. If more respondents are less than satisfied than I can be more confident that untangling earphones is a pain point. If more respondents answer satisfied or very satisfied, then this will reject the finding of untangling earphones as a pain point.

10. Please state one aspect you would change about your current backpack and why?

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**Rationale:** This question enables participants to input their own personal recommendations, allowing for exploration of new ideas.

**Plan for Analysis:** By doing thematic analysis, I can sort the qualitative data, allowing me to explore new recommendations and possibly confirm recommendations I have already.

Method: Survey

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I will implement my survey using Google Forms, a free, online survey platform. With my experience with Google Forms, this online survey platform is cost-effective and time-efficient.

Work Back Schedule

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This survey plan will follow the work back schedule listed below.

	MON	TUES	WEDS	THURS	FRI	SAT/SUN
<b>MAY</b>		15	16	17	18	19/20
		Survey Plan Due	Make/finalize Survey		Send out surveys/advertise	
	21	22	23	24	25	26/27
		Response Count Check in			Data Analysis	Make and Record Presentation
	28	29	30			
			Survey Presentation Due			

References

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How heavy is your child's backpack? (2016). *The American Occupational Therapy Association, Inc.*  
 Retrieved April 2, 2018, from <https://www.aota.org/Publications-News/ForTheMedia/OT-in-the-News/2016/092016-BackpackDay.aspx>.

**Appendix 2: Notes and Images**

**Part A: Field Notes**

Field Study 1 - Suzzallo Library

Date: 4/9/17

Time: 11 - 11:30

## Abbreviation

- [] - my thoughts
- BP = backpack
- PS = possessions
- w/ = with

## Notes:

- Female with pink BP w/ teddy bear key chain places her BP on the table
  - Pulls out tangled headphones out the front pocket of the BP (only two pockets/compartments of the backpack) [smallish BP]
  - Stands there and spends time untangling headphones [around 5 seconds]
  - Put earbuds in her ear and grabs backpack by a top strap located on top of the BP
  - Puts one strap and then the other, wearing two straps
- Male is sitting at table w/ BP resting upright against his chair
  - PS = notebook, pencil a laptop, calculator out in front of him
  - Is chewing gum
  - BP = Black, Columbia branded
    - Water bottle in side compartment
  - [time passes]-----
  - Starts packing and opens middle compartment
  - Puts a laptop in a sleeve and folder in the largest compartment
  - Zips it, puts it on the table
  - One strap and walks away while looking down at his phone
- Male leaves table and puts [tangled] chords/wires [looks like a charger] in the main compartment of his BP
  - He first puts one strap on than the other strap as he walks away
- 2 males [friends] sitting at a table together with their BP on the table
  - One blue BP has one compartment unzipped and seems to have a total of three compartments
  - One grey BP is closed (zipped)
  - Computers and notebooks are both out in front of them
  - [time passes]-----
  - Begin packing up
  - Closes notebook and laptop, talking as they put things away
  - One male puts binder back in his blue BP
  - One male put laptop in a sleeve and then puts it into his BP
    - Male fits the laptop with sleeve on in laptop compartment [takes a couple of seconds to fit it in]
  - Uses the table to prop BP and finishes zipping up BP
  - Zips BP
  - Both two strap the BP
- Male sitting in chair without a desk and table in front gets up
  - Puts notebook in BP and zips it

- Puts jacket on
  - Puts both straps on
- Female with BP has pins and a helmet attached to the strap hanging from the bottom
  - Puts two straps on
  - Turns around to another table to open her BP again [can't see too much cause her friend came by talking to her]
- Male leaves put his water bottle in side compartment and laptop in a laptop compartment
 

-----[time passes]-----

  - Sits down in a different spot of mainly chairs rather than desk and chair
  - Places BP on seat
  - Walks over and talks to the 2 males with backpacks on table

-----[time passes]-----

  - Puts on his headphones that go over the head
- Female leaves and zips up her BP w/ the zippers meeting at the center/middle
  - Puts one strap on and then another, two strapping her backpack
- Female using pen to write in a notebook, her BP resting against her chair
  - PS = plastic water bottle and compostable coffee cup with sleeve. Her BP is next to her chair resting
- Female puts BP on another chair to zip it up and has coffee cup on side holder. Has pieces of paper on the other side holder
  - She puts black BP on, takes BP off, sets it on the chair
  - She rummages through BP and then puts BP back on
  - She walks to her spot and puts her headphones on
  - Goes on her phone with BP on, plugs in earbuds
  - Carries book, water bottle, and plastic drink in hand
- Female stands up and looks at phone
  - Picks BP up by the compartment, puts laptop in sleeve and zips it
  - Places laptop in different compartment
  - Grabs zippers on both ends
  - Puts BP on and carries coffee cup
  - One straps the BP and drinks coffee while walking with BP
- Female with plastic water bottle and plastic container, eating food bought
  - She puts notebooks in her hand and walks away with her food, water bottle in hand
- Female with BP carries a box of wheat thins and carries jacket and pulls out laptop in laptop sleeve
  - Puts laptop on her lap, takes out a little bag opens it and puts it back
  - Takes out paper [hand wipes], wipes it on her hands, rubs it around her hands
  - Takes glasses off
  - Unzips laptop sleeve and opens her laptop
  - Puts her glasses back on
  - Leaves her backpack behind her on her chair
  - Another girl [friend] joins her and talks
    - Pulls out small lunch bag and takes out a snack
    - Opens snack, eats some, and shares with the girl at the table

- 11:21 - not much traffic, empty tables and chairs
- Female with black BP leaves with a plastic water in hand
- Male with backpack leaves with a black BP and two straps it
  - Starts walking but then stops to look at his phone
  - Is looking at his phone while walking
  - Stops looking at his phone and continues walking
- Male walks by with BP opened, holds banana peel in hand
- Female puts notebook and binder in BP
  - BP has pins
  - PS: water bottle,
  - Puts BP on walks away with phone in hand and earbuds in
- Female walks by with BP on and water in hand
- Female in front of me across the table
  - PS: water bottle, glass container with food, notebook, pen, granola bar, laptop, laptop sleeve
  - [time passes]-----
  - Female has headphones in and puts her BP on
  - Once BP she puts her water bottle in the side compartment and walks away
- Male put BP one strap, pulls out chair and sits down
  - Unzips backpack
    - Pulls out laptop
- Male sits next to guy already sitting down [friends]
  - Talks to him with his backpack on
  - [time passes]-----
  - After a while male friend puts BP down, takes off jacket, pulls out laptop from BP
- Female sits down and puts BP on the floor
  - Pulls out phone and starts texting
- 11:27 - traffic starts getting busser [classes over]
- Female sits down w/ BP, goes on her phone and sits down
- Male with earbuds puts black BP on table
  - Pulls out laptop, pieces of paper, one by one
  - Opens small compartment and then zips it up
  - Places backpack back on the floor
  - Pulls out eyedrops and places eye drops in eye

## Field Study 2 - HUB

Date: 4/10/17

Time: 3 - 3:30

Abbreviation

[ ] - my thoughts

BP = backpack

PS = possessions

w/ = with

Notes:

- Male with red BP is on the floor leaning on his helmet
  - Laptop, pencil case and calculator on table
  - Writing with a pen
- Female sits down and takes off BP, put it on the floor
  - Carrying an iced drink and good, pulls out her phone
  - Pulls out a book from her laptop
  - Eats while she reads her book
- Female is on her laptop with her purple BP in the seat next to her
  - Has a binder on the table and pencil pouch
  - [time passes]-----
  - Female puts laptop in laptop sleeve and places in the largest compartment of her backpack
  - Puts her notebook in the same compartment
  - Zips her backpack up
  - Goes on her phone
  - Places reusable water bottle in side compartment
  - Puts backpack on, with umbrella in one hand and a phone in the other hand
- Female with backpack walks up to a table with coffee in one hand and a phone in the other
  - She sets her backpack on the floor by her feet
  - There is a plastic container in the side compartment of her BP
  - She unzips her BP and pulls out a laptop
  - She pulls out a tablet and pen (for the tablet) and sets it right in front of laptop
- Female puts on blue jacket and leaves
  - Uses one strap to carry her BP
  - Her BP is black with a key chain, and reusable water bottle in side compartment
- Female with glasses purchases drink at Starbucks
  - Takes one strap off and swings her backpack around
  - Unzips and adds something into her backpack
  - Puts the other strap on
  - Picks up her coffee
  - Has a thermos in side compartment
  - Finds a seat and sets BP down
  - She goes on her phone
- Female with black backpack sits down with backpack on and looks at her phone
- Female untangling headphones from her backpack
  - Takes out pencil pouch from backpack
  - Is writing in a notebook with a pencil
- Female orders food with her bp on
  - Takes one strap off and puts her phone in the side compartment
  - Picks up drink from counter and walks away

- Female [friends] have a laptop, yogurt container, wallet, keys on the table
- Female with red Jansport backpack is on her phone with the earbuds connected to her phone
- Backpack and belongings under a table with no one at the table [looks abandoned]
  - On the table there is a mug, chopstick, compostable container, mug, spoon, water bottle, ripped up book

### Field Study 3 – Odegaard Library

Date: 4/11/17

Time: 11 - 11:30pm

Abbreviation

[] - my thoughts

BP = backpack

PS = possessions

w/ = with

Notes:

- Female with braid on the phone with her purple/blue North Face BP on the floor
  - Plastic compartment on the water bottle and wallet in the other side compartment
  - PS = Small over the shoulder bag, jacket, sunglasses, laptop  
-----[time passes]-----
  - She puts her laptop in BP
  - Puts one strap of the BP and puts purse the same shoulder
  - Picks up her thermos, phone, keys and walks away
- 2 males [friends] with BP on the floor beside their feet
  - Both have a laptop
  - One male has a textbook and water bottle  
-----[time passes]-----
  - One male puts BP on the desk
    - Puts textbook away
    - Puts plastic water bottle in side compartment
    - Zips up his BP
    - Puts on jacket
    - Picks up a drawstring bag off the floor
    - Two straps the BP and carries the drawstring bag in his hand
  - Other male has a black BP with reusable water bottle in side compartment
- Female with laptop opens all the compartments of her BP

- Spreads the compartment apart to open it [doesn't use the zippers to open her backpack]
  - Sticks her hand in to several compartments and pulls a calculator out
- Female with black BP leaves
  - Has a water bottle in side compartment and pins on her BP
- Female with black North Face BP
  - PS: laptop, empty zip lock bag [snack already eaten], notebook, drink in a plastic container
  - [time passes]-----
  - Pulls out a charger from her BP
- Female sitting the seating area has store-bought coffee and reaches into her North Face BP and pulls out her phone
  - Laptop on her lap
- Male with headphones (that go over the head) sits down and takes BP off
- Male with a black Adidas in seating area puts jacket on
  - Pulls BP between his legs using the top handle on his BP
  - Grabs the BP by the top handle and stands up
  - Puts both straps on
  - BP has a water bottle in side compartment
- Female and Male sit down at the same table.
  - The male sets his black backpack on the floor and leaves
  - The female set her black backpack on the table and sits down
    - She pulls the BP closer to her and unzips it, pulling out a notebook and laptop
    - Moves BP away from her
    - PS = phone, pen
- Female with over the head headphones, sets her backpack down using top handle
- Male wakes up in the seating area. Puts on backpack, leans forward and talks to another guy nearby
  - Male nearby has a laptop and black backpack next to his feet.
- Female walks by with backpack on, earbuds in, canned drink in hand
- 11:26 - traffic busier (more people coming in through the doors)
- Another female walks by with over the head headphones and a water bottle in her BP
- Male walks in and take off BP and holds it with one hand
  - Uses the other hand to take off jacket while walking
- Male with glasses walks up to computers
  - Carries a thermos with a handle [thermos is larger than most]
  - Has something in the side compartment [can't really see what]
  - Is chewing gum
  - Stands and interacts with the computers
- Male walks by carrying an umbrella with backpack on two straps. Walks and then stops to look down on his phone while standing
- Female walks by carrying a lululemon bag, umbrella and backpack is on
  - There is a plastic water bottle in the side compartment
- Female with hat walks by with a mickey mouse key chain attached to the zipper of her BP

- Female w/ BP on walks by holding umbrella in one hand, and a phone in the other hand

## Part B: Interview Notes

### Interview 1 | Patagonia Backpack

Location: HUB (third floor)

Day: 4/29/18

Time: 2pm – 2:35pm

1. How is school going?

It's going. Right now it's pretty stressful being week 5 into the quarter, but nothing I can't handle.

2. Why do you use your backpack?

Because I need something to carry all my things. And I use my backpack every day.

FUQ: Why not a tote or some other bag to carry your things?

Because I have a lot of things it's good, because it supports my back. If I use a tote bag I think I'd be straining one side of my back more than the other. And it's also compartmentalized for my laptop, my notebooks, and anything else I might need to bring. I've used tote bags in the past and I can only carry so many things. And my shoulders end up hurting.

FUQ: Talk more about the compartmentalize aspect you mentioned as an advantage.

Because I know where things are pretty quickly. I have a certain space for things like my laptop. And it protects it so it doesn't get damaged. I can take it out and like all my notebooks are in the big compartment, so I know where to reach. And random things like snacks I carry throughout the day. I have my wallet, my calculator I can put in different compartments. So it just makes things more organized and less likely for me to lose or misplace or spend a lot of time looking for.

FUQ: When do you use your backpack?

I take it with me to coffee shops when I work. I take it with me when I travel somewhere. It's just a convenient way to carry a lot of things.

FUQ: When would you not use a backpack?

When I am going out with dinner with friends or too hang out. Basically, to do anything that doesn't have something to do with productivity. I don't really use my backpack when I go to the gym.

3. How did you end up with the backpack you have today?

The backpack I use today right now it's a recent purchase. I got it at REI like a month ago. Because my other backpack was getting pretty worn down. And I wanted something that was a bit smaller and more compact. Because I am a smaller person and a giant backpack just swallows me. I wanted something that was very compartmentalized and can still carry

everything, but something not as giant. I chose to go to REI because they have a good selection and I am outdoorsy. And they have pretty good brands that are durable. And I got a Patagonia backpack because it was pretty cheap, nice color, had all the right compartments, and I've been using it in my day to day life. It's been pretty good. I'm satisfied with my purchase, and hopefully it will last me many more years.

FUQ: Why are you satisfied with your purchase?

Because it's cute and it carried everything I needed it to carry. Everything fits. Even though I have a lot of things and it may not look like the biggest backpack, it has enough compartments where I can compartmentalize I guess. And it's not too heavy, it's lightweight, and it's comfortable on my shoulders. It's a nice color. And I can see myself using it for other activities like travel.

FUQ: What made you decide to choose this backpack over others?

When I think about it, I was between a couple. This one was under \$100 so it was more of a reasonable price. And I like the color [dark blue] because it goes with a lot of outfits. And it wouldn't stand out too much or get dirty easily. And I tried several on, it was the most comfortable fit wise. I brought my laptop with me to see how it would work or fit. It was the best one in my opinion because of it's comfort, the way it looks, and it's ability to carry things.

FUQ: You mentioned you like trying the backpacks on. Is this something you usually do before purchasing a backpack?

Oh yeah definitely. I try it on before buying it. But I think it's hard when you are just trying on backpacks, because at the store there isn't anything inside them. So it's hard to gauge what the actual comfort level is when you first wear it. And it does feel more rigid. So kind of like wearing it in like a pair of shoes. I never get backpacks online because it's hard to tell if they'll fit well without trying it on first.

4. Walk me through what's in your backpack?

[participant opens backpack and begins taking things out as the participant speaks]

[opens the largest compartment] I have my pencil pouch, my Mac book charger, my MacBook, I have 5 notebooks, a folder, my wallet. [looks on the side compartment] And my water bottle. [opens the middle compartment] My planner, my passport, a small notebook, candy, tampon, tic tac, hand sanitizer, calculator, extra hair ties, another small notebook, random piece of paper, ibuprofen. [opens the smaller compartment] Oh there's more. I have snacks, my retainer, mascara, more crackers, some meds, and more hair ties.

FUQ: What are your key essential possessions?

Laptop, charger, wallet, pencil pouch, all my notebooks, planner, calculator, and snacks.

FUQ: How do you decide where to place what in what compartment?

Snacks go in the outer compartment, because I try to keep them separate. Everything ranging from snacks to big things goes in the middle one. Like my planner, smaller notebook, wallet, and ibuprofen and it's just best to put this stuff in the middle.

5. Is there anything you like about your backpack?

I like the color of it. I like the way it fits on my back and it's not too big. I can still wear it without running into people. It's just very compartmentalized. It's tight, so everything is close together rather than hanging all over the place. I like that it's lightweight, so it doesn't strain my back too much. It's compartmentalized so I can keep my snacks for the day separate from my notebooks.

FUQ: Talk more about why you want your snacks separate from your notebooks.

Because my notebooks can crush my snacks. If all my snacks go to the bottom of my backpack and if it was just one big, giant, rectangle or bag, then they would go to the bottom. And it's not fun to eat chips when they are all crushed up. Or my burrito. Also if anything leaks. Like for some reason if anything doesn't close properly it won't get on my books or my laptop. Also I have a better sense of how many snacks I have left in my backpack, rather than forgetting something that is all the way on the bottom of my backpack. I can open the snack compartment and know exactly what I have left to sustain myself throughout the day.

FUQ: You mention a lot about compartments. When was the last time you felt the compartments were useful?

The one I use the most frequently is my laptop compartment cause it's the closet compartment to my back and it's in the largest pouch. It's kinda a separate thing where I can just slide in my MacBook Air. And I don't carry my MacBook Air in a pouch like a lot of people do because it's too big and it ends up taking too much space so it's convenient for me to put my laptop in a more compartmentalized area that has more cushion with a separate layer of my backpack. So I know when I put my backpack down, it can hit my laptop's edge first and potentially ruin it. So it's more protected. Because I am always in a rush to get from place to place usually I just throw it in, put my backpack on and run somewhere. It's just ease of mind knowing my laptop will be protected.

FUQ: Do you use the compartments of your backpack consistently?

Oh yes definitely.

6. Is there anything you dislike about your backpack?

Let me think. I think it would be nice to have. Because I mentioned that my backpack is compact and smaller and I do have a lot of things I carry to class everyday, so one aspect I am not super satisfied with is the compartment where it has room for the little stuff like chap stick, tic tacs, and a place for my keys. So having more smaller pockets in the middle compartment where I can put specific things rather than throwing it all in one place would be nice. But it's something that is also constrained with just being a smaller backpack in general.

So there is going to be cost benefits. But it's nothing that I would return my backpack for. It's just sometimes my keys end up floating around because there's not a distinct place to put it.

FUQ: So more small pockets for keys and chap sticks?

Yeah and a place for my phone or hand sanitizer. Like little things you want to carry about like a tampon or pad. And you want to keep it in a separate compartment from everything else.

FUQ: Can you tell me about a specific time when you found what you just said inconvenient? I can't like. There is no good place to keep my pads and tampons. It would be nice for a close, zipper compartment thing within another compartments.

FUQ: Does your backpack have side compartments?

Yeah I just put my water bottle. Because they don't close if I used it for something else I could end up losing things.

FUQ: Is there anything else you dislike or thoughts?

Well the compartment I keep my food at is on the outer part of my backpack or the further compartment. And it zips down and opens. I feel like I can't put an apple there because it will bulge out. But that is just the design of the backpack. Sometimes I feel like things can get a little squished in there. But it's just capacity constrained I guess.

FUQ: What would you do to change that?

I would just make the smaller compartments bigger. So you can put more things in there. Like they don't have to be as small as they are.

7. Have you ever carried headphones/earphones in your backpack?

Yeah I have.

FUQ: Where do you put your headphones or earphones?

See that's the other thing is there's no good spot. Sometimes it just floats in the bigger compartments on top, but normally I keep it in my pocket with me or like in a pencil pouch so it's not like free-flowing cause it can get lost easily in the bottom.

FUQ: Tell me about the last time when you took out headphones/earphones from your backpack?

Probably a couple days ago.

FUQ: Can you walk me through that?

I opened the bigger compartment. My hand went inside the backpack and looked for the headphones. Once I felt them I pulled them out. So they were a little bit tangled. Probably shouldn't do that.

FUQ: You said you found them tangled, do your earphones typically get tangled from your backpack?

Yes they do. I feel like they are more tangled from my backpack than my pocket. In my pocket there's less room for them to move around whereas in my backpack they can sink all the way to the bottom and I can put a bunch of other stuff. It honestly makes it easier to damage them because your pulling on string. And I've honestly damage them that way before but it's fine.

FUQ: Tell me more about what happened when you damaged them?

Well if my headphones go all the way to the bottom and I am trying to pull them out. There so long that they will tangle around itself or they get caught on something. When I have damaged them in the past, it's usually yanking it too hard when something is caught on something. And it unravels, or something disconnects and you can't listen from both headphones as easily as you could in the past.

FUQ: And this all happened within your backpack?

Yeah.

FUQ: So would you say this changed the way you carry your headphones?

I normally put it in my backpack as the last resort if I don't have pockets or my pockets are full. Normally my first choice is to put my headphones in my pocket.

FUQ: Would you use a compartment in your backpack that was for headphones?

Yes. And honestly there is one in my current backpack. But I am using it for other things and there's not enough room for my headphones too.

FUQ: Do you find this possession important or not that important?

Very important because I use the bus a lot. And I listen to music on my morning commute and evening commute. And if I am studying and I want to block out noise from the environment I also put headphones in to keep my focus. And going to the gym, I can't workout without my headphones. I use my headphones at least once a day. So making sure they don't get damaged or keeping them where I can find them is very important to me.

8. Have you ever used the laptop compartment in your backpack?

Yes. All the time.

FUQ: Can you reiterate why you use it?

Because I don't use a carrier or pouch to protect it, so having a laptop compartment is convenient so I can just slide it in. If I am on the go, and not worried as much about damaging it. If I accidentally throw my backpack down and it falls somewhere. And it keeps it separate from everything else, like the snacks, notebooks. And it's easy to put it back in and bring it out.

## Interview 2 | Everlane Backpack

Location: HUB (third floor)

Day: 4/29/18

Time: 7pm – 7:30pm

1. How is school going?

You know it could be better. I'm juggling a lot of things right now and looking forward to the quarter. Could be worst. Taking global health courses, ready for the end of the season.

2. Why do you use your backpack?

I use my backpack so I can consolidate all of my things when I am going to and from mostly school. I also visit home on the weekend and for longer travel. I'd say on a day to day use I mostly use to carry my laptop and most of my essentials I need for class and also to study on campus. I think just relative to purses it's easier for me to carry. Versus carrying a single shoulder bag it's less weight on only one of shoulders so I feel more balanced. I feel like when I don't have my backpack I am missing a part of me, just cause I take it so frequently.

FUQ: When would you use a backpack?

I use it I'd say every day of the week either when I go to class so that's Monday thru Friday, but also on the weekends when I go somewhere to study. I use it to take my things but also I've had this backpack for 5 or 6 years now so I use it when I travelling for day trips and also week long trips. It's kind of my go to.

FUQ: Why a backpack? And not a tote or larger purses.

I'm the kind of person that stuffs everything into one bag and I don't often change what's in my backpack based on where I am going. A few things here and there like if I go home on the weekend I'll grab my toothbrush. I have everything I need. I feel like the size allows me to keep all of the things I need in here. I think a backpack versus a purse or a satchel allows me to carry a heavy load more easily. A lot of times if I carry a purse my shoulder will get sore.

FUQ: When would you not use a backpack?

I wouldn't use a backpack when I am going out with friends. Or I have no intention to use or study with my laptop. Like meeting a friend for lunch or dinner. Or like when I am shopping. Sometimes I want a lighter load and I will just bring my wallet. Or grocery shopping. I usually just throw my wallet from my backpack to my purse and carry a bunch of grocery bags with me and then go

3. How did you end up with the backpack you have today?

My backpack is from Everlane. It's from a company I respect and admire because of their sustainability practices and transparency. I think they represent a lot of the causes I care about. So I was really excited because this was my first purchase from Everlane about 6 years ago. I wanted a backpack a little less sporty, because that's what I had before. I wanted a backpack that could kind of transcend different aspects of my life whether it's like to class, it can be a little bit more casual. Like if I wanted to take it to someplace more formal, I'd take it to work sometimes too in my past internships. For me, one is the company. And it has this grayish color that is neutral to where I was going to be or what I was wearing. I guess I put in a lot of thought into it.

FUQ: Why not other backpacks online or in store?

The color was really neutral. And it's a very simple, stripped down backpack. It doesn't have a lot of pockets or design aspects. I feel like I am more of a minimal taste relative to a lot of other backpacks that you see on campus that are a bit more sporty. I liked how it was more simple and sleek.

FUQ: Are you satisfied with your backpack choice?

I think so. There are some frustrations that I have with it. If I were to get a new backpack I would choose a different one. But I kind of grown attached to how dependable it is and how long it's lasted me, considering for 6 years I have used it for maybe 90% of the day. So yes I am satisfied overall.

FUQ: Why are you satisfied?

The size is pretty good. It's not too big and bulky, but it carries. It was a nice laptop case. And usually when I am going to class or shopping that's like the one thing I need to have. It does have one pocket in the front which allows me to carry smaller items like keys, pencils, chap stick. But like I said it's pretty simple with only 4 pockets total including the laptop case inside. It's a very neutral item that I can wear when I am trying to go for a bit more formal like career fair or work versus just going to class. And it also represents a brand I care about and a company that I like.

4. Walk me through what's in your backpack?

[participant unties a string and opens backpack]

I'll start with my laptop and it's currently the only thing in my laptop case. I have a single folder, my wallet, my water bottle, three subject notebook that I use for class, a sketchbook that I use for drawings, journal/diary, tampons. [reaches into side compartment] I have a pair of headphones, scratch paper. [opens front smaller compartment of backpack] I have a pack of gum, chap stick, highlighter, pens or pencils, eraser and my husky card.

FUQ: Why do you place your laptop in the laptop case/compartment?

So I don't have a laptop cover or a case that physically goes around my laptop to protect it. And I just feel like it's kind of an extra layer of protection than the rest of my backpack. I feel like with the spiral of my notebook, I don't want my laptop to get scratched up. I also do have my water bottle in here and I feel like the pouch itself is kind of thick. So I can kind of separate it cause I have spilled water from my water bottle in my backpack. So it keeps it a little bit protected

FUQ: Why do you keep your water bottle in the bigger compartment?

I do have these little pockets on the side but I just feel like they don't close or tighten. I feel weary about keeping something so bulky because they can fall out when my backpack is completely upright. Also I don't want to stretch out the pockets themselves. Because if I do have anything else in there where my water bottle would be those things could fall out. I keep my headphones in there and I feel like if the pockets expanded too much, my headphones will be lost all the time.

FUQ: Do you have any key essentials in your backpack?

Most of the stuff I mentioned is in my backpack at all times. I would say my laptop is the most essential thing. I usually don't go anywhere without it. Almost all of my school work requires that I have my laptop. It's kind of a staple for me. I usually take this journal. You never know when you need some scratch paper to make a list or take some notes. I feel like sometimes having this is more professional than taking it on my phone. I would say my wallet is a staple. I don't go anywhere without it. The last thing is my water bottle. I don't always use it but I try to stay hydrated. Also it is always good to have a spare writing utensils so I usually don't take these things out.

FUQ: How do you decide what possessions goes into which compartment?

I think a lot of backpacks have a lot more pockets than I do. So mine just really has the main pouch, laptop slot, pocket in front and these two pockets on the side, which I don't use very much because they don't close or zip shut. I'd say anything that's smaller than the size of the credit card would go in the front pocket that includes pencils, chap stick, husky card, pack of gum, but the rest of items don't really fit in my front pocket because my front pocket is really small. And my laptop I just want to keep it isolated so nothing is scratching it, especially if I toss food or snacks in my backpack. I don't want to get crumbs or food in the crevices. So yeah it's mostly based on size I think. I do sometimes put my keys in front of my backpack. My keys and my husky card are always in the front just cause it's a little easier to access. In my backpack, the main pocket doesn't have a zipper and has the two buttons that aren't always the easiest to close. And the front pocket is a zipper so I try to put the more crucial items there.

FUQ: If the side compartment did zip shut would you use it more often?

I think so. I do currently put my phone in there sometimes just cause it's easy to reach and sometimes I put my headphones in there. But the size isn't the biggest area so I feel like I might put a chap stick or a pack of gum. So it would have to be a smaller item. And right now it's kind of sufficient for me to toss everything in the front pocket, cause it's not like I have a ton of things to put in there anyways. If these two pockets did have a zipper, I might distribute things differently and it would be easier to find things.

5. Is there anything you like about your backpack?

Yes. I like the color. It's a gray with darker brown, leather accents. It's very simple and minimal, which is kind of my taste. I like that it has a laptop pouch because it fits my laptop very nicely. I think if I did have a bigger or bulkier laptop it might not fit as seamlessly as mine currently does. I also like that it has a front pocket to access smaller items easier that might get lost in the bigger pocket. I just like the company that it's from too like I mentioned before.

FUQ: Why do you like simple and minimal?

I think for me it's a little more functional to me. It's nice to have something I can use for multiple functions. If it's more simple it can transcend different events I will have to take my backpack to. I can take it to class. I can take it to work versus if it's something a little more sporty I couldn't take it to work. I wouldn't buy a full on leather, marc Jacobs backpack either. I would feel like I wouldn't want to take that to class. I'd just be so afraid of bringing something nice. So I feel like for me this is a nice middle ground. It's simple I don't have to think about whether or not it works for the function I need it for.

FUQ: You've talked about that front pouch. Can you tell me about a time when you found it useful?

Yeah, I sometimes keep keys and husky cards in a rain jacket. In warmer weather when I don't have a jacket, I feel more comfortable keeping those kinds of essentials in the front pocket. Because there has been a lot of instances when I leave my husky card in one jacket and at the end of the night I'll forget it the next day if I'm wearing a different jacket. So I'll put it in the front pocket to prevent it from getting left behind. I also like to toss a pack of gum in there. It keeps me preoccupied and you never know when it can come in handy. I feel like if I put a lot of the smaller items that I have in here in the larger pouch they would be a lot less accessible and hard to find. And it would make my big pouch a bit messy.

6. Is there anything you dislike about your backpack?

Yes. The main thing is the way that it closes. It has this string pulley system versus a zipper, which most backpacks have. Sometimes I worry that things aren't sealed tightly enough and because I have my valuables like my laptop and my wallet. It is important that my backpack stays closed. Also these two buttons I close it with. As you can see they are kind of hard to take off and because I've used it for 6 years and overtime it kind of gotten some wear on it. I'd say If I had to get a new backpack I would want a zipper. I do feel like it's a little more functional, but I do like the style of the one I currently have.

Another thing it would be nicer if the the front pouch was a bit larger. Because there has been a lot of times when I am in a coffee shop or a restaurant, and I am digging for my backpack in my wallet. And my wallet gets lost in the main pouch. So that's one larger item I'd like more access to. It's not waterproof. I feel like in Seattle that's an issue. I got this backpack when I lived in Minnesota so it wasn't an issue before. But I was kind of concerned at first with how this backpack would hold up in the rainy weather. But I think because the material is thick it's done a fine job. Also if these side pockets were more size adjustable than I feel like I can depend on them a little more. Usually I just toss a pair of headphones in there, but only cause my headphones are small enough to stuff in the bottom and not worry about them falling out. This is another wear and tear on the backpack, the straps are kind of fraying.

FUQ: What might you look for in a new backpack?

I would want waterproof material. I would in the future look for a waterproof backpack especially if I know I will be in Seattle. And because of the way it closes, it takes me longer to close my backpack that it should. These buttons are a bit stubborn.

7. Have you ever carried headphones/earphones in your backpack?

Yes.

FUQ: Where do you usually carry these headphones?

I usually have two sets. One that plugs into my phone and one in my laptop. So what I usually do is put one on each side of the pockets. That way they don't get too tangled with each other.

FUQ: Why did you decide to put them in the side compartment?

I think in the larger pouch they would get kind of lost and lodged in the bottom of everything. In terms of the front pocket, because I have so many small things like my husky card and pencils, I feel like it would get tangled with everything. Versus my side pockets I don't keep anything else in there, so is it's own little pouch. Also it's quick to reach in and grab it. Even if I am walking and I can reach back and grab my headphones without having to pull my backpack off.

FUQ: Why don't you want your headphones to be tangled?

A lot of times I will be walking while I start using my headphones. It's distracting when I have to look down and not be aware of my surroundings, while I try to get these headphones untangled. And really it's kind of a time investment and nuance. It would be easier if they were perfectly laid out in front of me.

FUQ: Do you consider your headphones important?

I use them a lot to talk to people on the phone so my hands are more free, especially if I am in a shop. I can use the microphone on the headset to talk a lot. Or I usually put my headphones in to listen to rain or music to study.

How often do you use your headphones?  
At least maybe 5 times a day.

8. Have you ever used the laptop compartment in your backpack?  
Yes.

FUQ: How often do you use your laptop compartment?  
Daily. Usually there's not a day that goes by without putting my laptop in my laptop compartment.

FUQ: Why do you use his compartment?  
Mostly just convenience and also it protects my laptop a little bit better. That way it doesn't get scratched or wet.

FUQ: What makes this compartment "convenient"?  
I guess when I do have a lot of possessions I guess it's nice when there's a space for it and it's easy to slip the laptop in and out without having to shuffle things around.

FUQ: In general do you have any thoughts about your backpack?  
Not really. I guess I kind of mentioned this before but my backpack is another limb – considering how frequently I use it. I don't like leaving the house without it because even if I do have my purse there's always something missing that's in my backpack like my headphones or pack of gum.

### **Interview 3 | Mountain Hardware Scrambler 3**

Location: Rotunda (Health Sciences Building)

Day: 4/30/18

Time: 10 – 10:30am

1. How is school going?  
School's good. Taking it a little easier this quarter because it's spring and I want to have more time to explore. Currently, I'm doing physics, genetics, and math so it's a lot of science, but I'm having a good time for sure.
2. Why do you use your backpack?  
I need a backpack basically to carry a laptop and my school work. I tried a messenger bag for a little bit and I felt like I was being lopsided because of the nonsymmetrical weight distribution. I felt it a lot more in one shoulder than the other. I definitely like the more uniform weight distribution of the backpack.

FUQ: What exactly made you decide to go with a backpack and not a messenger bag. Talk more about that.

Mainly the weight distribution, but also I have used a backpack pretty much my whole entire life. And so the organization of the messenger bag is a little different. It's more horizontally organized compared to a vertically organized thing. And I enjoy packing vertical. And packing vertically seems to be a more efficient way personally.

FUQ: What makes packing vertically efficient?

Because horizontally things get stacked onto each other and you have to go through layers and stuff, but vertically you can see everything. It's all catalogued and easy to access.

FUQ: When do you use your backpack?

Pretty much every day. I was joking awhile ago when I went downtown for recreational purposes. I didn't have a backpack on and it felt weird because I felt so light and free. I basically use a backpack all the time and every day. Going to class, going home, doing literally anything. I always carry a laptop just in case there's time to work or catch up on readings. It's always nice to have everything with you, you possibly need.

FUQ: When do you not use a backpack?

There was that one time when I was joking about feeling light and I think that was probably once in the past month when I left my bag before leaving the house. It's pretty rare when I don't have my backpack with me.

FUQ: Why did you decide to not bring your backpack?

Mostly to force myself not to work. Like I actually wanted to take the time and not think about school for a second.

FUQ: Do you associate your backpack with school or work?

To an extent. It's also a big part of recreation for me so like with hiking or biking I also have a backpack on. So it's a mixture of both. But I definitely associate it with my laptop and carrying school work and things like that.

3. How did you end up with the backpack you have today?

So this one is a Mountain hardware scrambler 30. I won it in a raffle in a avalanche safety meeting in mountain hardware in downtown Seattle. I entered my name last second and I guess my name was on the top of the raffle so I was picked. I've used it pretty much ever since then. It's waterproof which is like the biggest selling point for me. It is Washington and it rains all the time. It's very versatile for sure. It's an open mouth top so it's easy to shove stuff into and it's got a laptop sleeve, which is great.

FUQ: What made you decide to use this backpack after you won the raffle?

I think it comes down to it being waterproof. I previously used a timbukte, which was much bigger than that one and waterproof. Which was the main reason I used it. And I think with this one it was just new and improved. And it looked cool.

FUQ: Why do you think this backpack was “improved”?

I think it was just the newness of it. It was a new toy to try out. And also it is really comfortable and really light compared to the other backpack. If it’s empty you barely notice on your shoulders which is nice.

FUQ: Are you satisfied?

Um there are some things I would improve with it. For example, the brain of it which is the thing that covers the top is in a very inconvenient clip. And it would take an extra two seconds to unclip it. It’s really not a big deal but it’s the details of the ease of opening and closing that you really start paying attention to after awhile.

4. Walk me through what’s in your backpack?

I didn’t bike here today s normally I do have a helmet and pump. But we will start with the top. I have a laptop charger, a kindle, phone charger, a lot of pens, a bike tool just in case, a calculator. That was in the brain. Then I have my laptop in the neoprene pouch and there’s these two moleskins in there. My passport, my hydroflask, a binder full of notes. I don’t have a change of clothes for working out today but usually I have that.

FUQ: How did you decide to put what where?

Well this is mostly a hiking backpack that isn’t really for school. So it is lacking in organization than most backpacks. Normally you have these pencil slots to put things. But this is all just one big space for all the smaller gear I carry or school work stuff I guess. And there’s a sleeve in the back that’s normally meant for water, like a camelback. But it kind of just makes sense to put my laptop in there. And the bigger I kind of just shove everything. There’s also these outer mounts and things. I don’t usually use this for school stuff. Then there’s these two water bottle holders, which I have to say is the most annoying because they are not stretchy. So if this [large compartment] is packed full on the inside, it’s nearly impossible to fit anything. I do put extra shoes sometimes on these mounts. And it’s great storage on the outside.

FUQ: You mentioned that it made sense to put your laptop in that compartment. What makes you think that?

I guess it’s a good spot for it because it’s the perfect size for a 13 inch MacBook. It’s almost intuitive. Like this is the most ideal place in most backpack with this little sleeve here. So it kind of makes sense. It also gives some structure to the bag against your back, so if you have some things in the main compartment that’s not perfectly shaped for it, it keeps it flat against your back and it’s much more comfortable.

FUQ: What are your key essentials in your backpack?

Notebooks, laptop, and pens. I could get away without anything else. It's funny since freshman year I have decreased the amount of stuff I've carried and I'm trying to carry less stuff because it's much easier on the body.

FUQ: Where do you put your water bottle?

So actually I keep my water bottle in the main compartment which is slightly inconvenient sometimes. Definitely notice I drink less water when it's in there cause it takes an extra seconds to open my bag and get out my water bottle. I definitely miss having the side compartment that fits a water bottle. That just comes down to elasticity.

FUQ: Do you think you would use the side compartment if your water bottle could fit and it was more elastic?

Oh yeah. That was the one thing I loved about my previous backpack. I don't really know how they designed it but you couldn't notice the water bottle was there and it tucked right into the bag, but it was still on the outside so it was easy to access. It is nice that when I leave over the water bottle doesn't fall out.

5. Is there anything you like about your backpack?

Definitely the look of it. It looks like a hiking backpack, which is cool. Also the fact that it's waterproof. It uses this out dry technology from mountain hardware. They seal the regular outside with a waterproof liner. And that's my favorite part about it. In the winter time I don't have to worry about anything getting wet. I can't imagine going back to a bag that isn't waterproof. I see people with rain covers on their backpacks on campus and I feel like you can just get a waterproof backpack. Also the breathability of the back could be better. Could do a better job with the venting just so your wicking some sweat if your biking.

FUQ: You mentioned you like the look of it. Talk more about that.

There's definitely a lot of feature I don't need but look kind of cool. And it looks outdoorsy. So it definitely it's this aesthetic that shows off what I enjoy doing in a way that probably isn't necessary. But I enjoy having that. And not a lot of people use this open mouth feature. It's nice to have that huge space to throw things in.

FUQ: What do you enjoy doing?

I'm pretty big into hiking and biking recently. And a lot of backpacking. This bag isn't designed for overnight trips it's not quite large enough but for day trips it's amazing especially in crappy conditions because it's waterproof. I could definitely do an overnight trip with it and it would nice and small but I would be pushing it because it's only 30 liters. So I use for hiking, biking and taking it to school.

6. Is there anything you dislike about your backpack?

Definitely the water bottle holders. Also the quality of the drawstring is hit or miss. Also I left it by the heater once and there is separation of the waterproof lining and the outside. But overall quality is great, I've used it everyday since I got which has been probably 5

months now. And you've barely noticed at all. It's worn pretty well. The quality is good overall there is just minor things that could be fixed.

FUQ: Can you tell me about a time when you noticed those minor things that could be fixed?

This hexagonal clip here is used to hold the top pouch shut. But it also manages to catch itself on like everything cause the shape of the clip has this closure. It catches on to other strings on the backpack, my headphones and things that I am walking past. I'd definitely prefer Velcro or perhaps a buckle. It is nice cause it's pretty adjustable though.

7. Have you ever carried headphones/earphones in your backpack?

Yeah I have a big pair of monitor headphones that I don't carry around because they are so big. But I do carry those sometimes when I am hardcore studying. But for the most part I use the in ear headphones.

FUQ: Where do you put your earphones?

Those just go in the main compartment with the big ones. The little ones just go in my pocket.

FUQ: Can you walk me through when you took out headphones from the main compartment?

Yeah so this is usually shut tight. The top bit you undo and you pull a tab to open the drawstring. And then you can access anything you want on the inside.

FUQ: Have you ever found your earphones tangled?

All the time. Not so much the big ones because they have a coil chord so they are pretty good at not getting tangled. But these little ones I think they are alive somehow because they become these incredible knots in my pocket. They take a long time to undo.

FUQ: Are the earphones more likely to be tangled in your backpack or pocket or is it the same?

I don't really store earphones in my backpack. But I can imagine they would get very tangled inside the backpack.

FUQ: Why don't you store your earphones inside your backpack?

Because I listen to music all the time. If I am walking somewhere I'll listen to music or if I'm studying somewhere. So I like to have it in my pocket. Having that extra ease of use and easy access it much better when it's in my pocket than in my backpack.

FUQ: How often do you use your headphones per week?

Every time I leave the house, between classes, and when I am studying. So pretty much all day every day. Yeah I don't really not use them. There's so much time when I am listening to music or podcasts in general.

8. It looks like you don't have a laptop compartment, but you kind of made one yourself. Yeah. So I utilized the space here that is usually for water, but I put my backpack in there.

FUQ: Tell me more about this space for your laptop.

So there's this main pouch and it's attached to the hard surface. And in between the main pouch and the hard surface there's this sleeve where you would put a camelback or in this case a laptop. And I guess it's just there. They could have just sealed it. And it kind of exists and I am using it for something that it's not meant for but it works very well.

FUQ: What makes you think it's not meant for a laptop?

There was this H2O label here but it's rubbed off. And it connect to this mouth pipe over here.

FUQ: Why do you use a laptop case?

I used to have a case that mounted directly on the laptop that gave it some protection. But then it cracked so I switched over to this neoprene case. That is waterproof as well. Macs are pretty expensive, so I just like the idea of protecting it a little more. I just like the idea of holding notebooks inside the case and it keeps them flat. And if I keep them in the main compartment they do get a little bent and the pages start folding over. And this is a nice place to store them along with my passport

FUQ: How often do you use that compartment?

Every time I use my laptop I always put it in that spot.

### Part C: Survey

A	B	C	D	E	F	G	H	I	J
Timestamp	How are you affiliated with the University of Washington (UW)?	How frequently do you carry your backpack? (Select one)	Where are you going when you carry your backpack? (Select all that apply)	Rank the following backpack features from most important to least important. [Laptop pocket/compartment]	Rank the following backpack features from most important to least important. [Waterproof]	Rank the following backpack features from most important to least important. [Side pockets/compartment]	Rank the following backpack features from most important to least important. [Small pockets]	How frequently do you use a laptop compartment or laptop pocket in your backpack? (Select one)	How frequently do you use your backpack's side compartments/pockets? (Select one)
5/21/2018 17:13:24	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Restaurant, Grocery store, Home	2	4	2	3	Always	Sometimes
5/21/2018 17:14:23	Full time student at UW	Always (5 - 7 days per week)	Class, trader joes, yoga, anywhere that I need to carry a lot of stuff	2	4	3	1	Always	Always
5/21/2018 17:25:59	Full time student at UW	Always (5 - 7 days per week)	Class, Grocery store	3	4	2	1	I don't have a laptop compartment/pocket	Sometimes
5/21/2018 17:26:34	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Grocery store, Park	3	4	4	3	Always	Always
5/21/2018 17:37:38	Full time student at UW	Always (5 - 7 days per week)	Class	1	4	3	2	Never	Always
5/21/2018 17:59:40	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Grocery store	3	2	4	1	Always	Always
5/21/2018 17:59:53	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop	4	3	4	4	Always	Always
5/21/2018 18:24:27	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Restaurant, Grocery store, Shopping mall, Work	4	4	4	4	Always	Always
5/21/2018 18:32:00	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop	2	2	1	1	Never	Always
5/21/2018 18:06:54	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Restaurant, Grocery store, Shopping mall	4	3	1	3	Always	Always
5/21/2018 19:26:44	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop	4	2	4	2	Always	Always
5/21/2018 20:19:44	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Restaurant	2	4	3	1	Always	Always
5/21/2018 20:20:21	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Restaurant, Grocery store, Shopping mall	2	4	2	2	I don't have a laptop compartment/pocket	Always
5/21/2018 20:21:19	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Restaurant	3	2	2	3	I don't have a laptop compartment/pocket	Always
5/21/2018 20:25:28	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop	4	4	4	4	Always	Always
5/21/2018 20:28:41	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Grocery store, Shopping mall	4	4	2	3	Sometimes	Always
5/21/2018 20:37:36	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Library	4	3	4	4	Always	Always
5/21/2018 20:47:13	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop, Grocery store	3	3	2	2	Always	Always
5/21/2018 20:59:39	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop	4	2	3	2	Sometimes	Sometimes
5/21/2018 20:56:12	Full time student at UW	Always (5 - 7 days per week)	Class, Grocery store	1	4	2	3	Always	I don't have side compartments/pockets
5/21/2018 22:33:10	Full time student at UW	Always (5 - 7 days per week)	Class, Coffee shop	3	4	4	1	Sometimes	Always

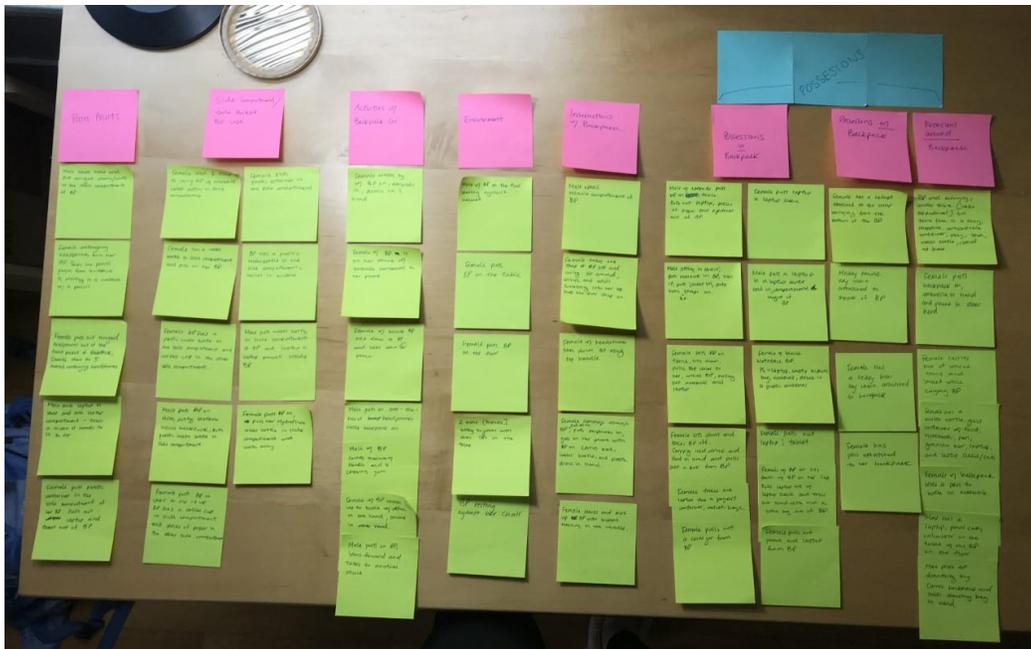
Screenshot of Survey Results #1

	K	L	M	N	O	P	Q	R	S	T
What do you store in your backpack's side compartments/pockets? (Select all that apply)		How often have you found your earphones tangled in your backpack? (Select one)	I find storing and retrieving earphones in my backpack...	Please state one aspect you would change about your current backpack and why.						
Bike lock		I don't store earphones in	Not Applicable	I would add elastic or some other kind of stretchy fabric to the external water bottle holders in order to accommodate a wider variety of water bottles						
Water bottle		Always	Disatisfied	I wish I loveeee my backpack because it has so many compartments and straps and I can fit so much in it. But the side pockets (water bottle holders) break super easily, so maybe a va						
Water bottle, Snacks		Sometimes	OK	More comfortable straps... hurts to carry for so dang long.						
Water bottle, Headphones/earphones, Snacks, Wallet, Keys, Trash		Always	OK	I'd make the water bottle pockets a bit smaller because my water bottle always falls out						
Water bottle, Headphones/earphones, Snacks, Wallet, Keys, Sunglasses		Sometimes	Disatisfied	Small side compartment with a zipper for my keys and wallet						
Water bottle, Snacks		Never	Not Applicable	Stop it from falling on its side face-forward frequently. Needs to stand when on the ground.						
Water bottle, Headphones/earphones, Wallet, Keys		Always	Disatisfied	Better back/shoulder support! My back and shoulders often hurt after carrying around a heavy load all day						
Water bottle, Paper, Headphones/earphones, Snacks		Sometimes	Not Applicable	Nothing my backpack is perfect						
Headphones/earphones, Snacks, Wallet, Keys		Always	Satisfied	Make the carrying capacity larger						
Headphones/earphones		Sometimes	OK	I sometimes wish my side pockets were size-adjustable, so I could secure my headphones in them.						
Water bottle, Headphones/earphones, Snacks, Wallet, Keys		Sometimes	Disatisfied	I would make it more waterproof.						
Water bottle, Sunglasses		Sometimes	Satisfied	The lack of padding in my laptop sleeve. The compartment is too thin and gets torn by the edges of my laptop.						
Water bottle, Headphones/earphones, Snacks, Wallet		Always	Satisfied	I would want it to be waterproof. Cause I live in Seattle						
Water bottle		Always	Very dissatisfied	Stronger straps. They are breaking						
Water bottle, Headphones/earphones, Snacks, Wallet, Keys		Always	OK	More waterproof						
Water bottle, Headphones/earphones, Wallet, Keys		Sometimes	OK	Design it to have a less bulky shape for aesthetics						
Water bottle, Headphones/earphones, Snacks, Wallet, Keys, Gum, hand sanitizer		Always	Disatisfied	I wish it had another compartment I could put snacks in						
Water bottle, Headphones/earphones, Snacks, Keys		Always	OK	It honestly would be nice if it had more of like a filing system so I could keep all of my classes easily organized						
Water bottle, Headphones/earphones, Snacks, Wallet		Sometimes	Disatisfied	lighter						
I don't have a side compartment		Sometimes	Satisfied	I wish it had side compartments because I would put my water bottle and other stuff in them. I have had to get creative to make it so I could carry my water bottle on the outside.						
Paper, Headphones/earphones, Snacks		Always	Satisfied	More space, it gets crowded because the compartments are small						

## Screenshot of Survey Results #2

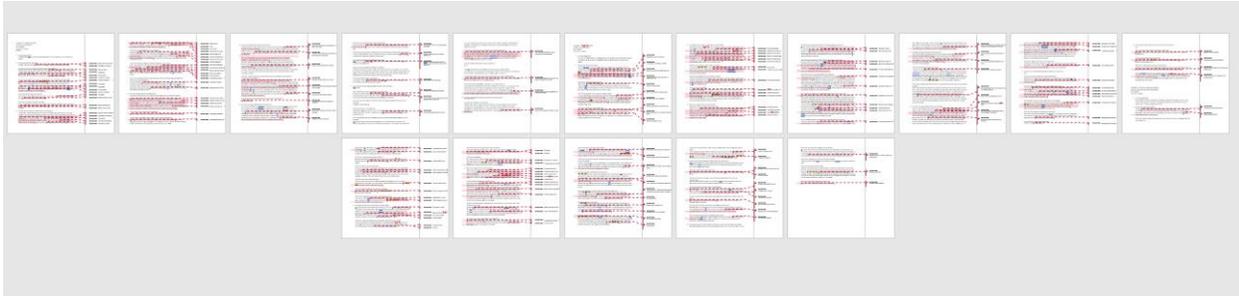
### Appendix 3: Data Analysis

#### Part A: Field Work



Final Affinity Diagram Overview

#### Part B: Interview

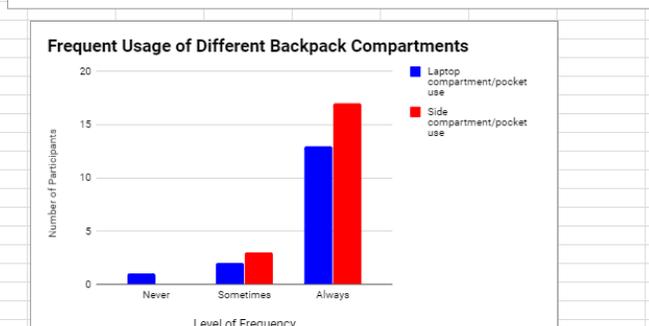
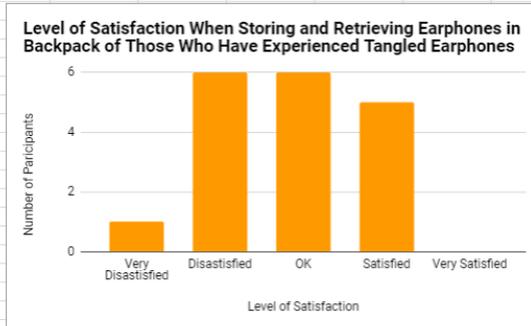
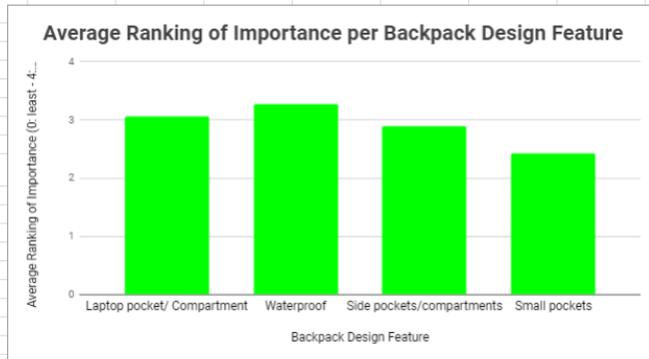
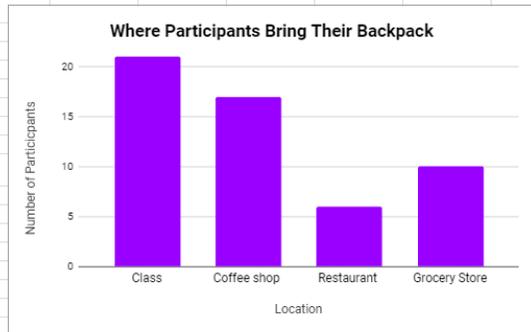


Screenshot of all the coded interviews

Participant 1	Participant 2	Participant 3
		
<p><b>Themes:</b>            Possessions            Frequency            Activity (with a backpack)            Purpose of a Backpack            Organization/Compartmentalization            Backpack Preferences            Backpack Brand            Existing Backpack Design features            Care &amp; Attachment</p>		
<p><b>Participant 1</b></p> <p>Backpack as a carrying product            Daily usage of the backpack            Good back support            Carries laptop            Carries notebook            Compartments allow for knowing what things are            Carries snacks            Carries wallet</p>	<p><b>Participant 2</b></p> <p>Uses backpack for short and long trips            Mostly use backpacks to carry laptop on the daily            I feel like when I don't have my backpack I am missing a part of me            Uses it every day of the week            Right size allows for all the possessions</p>	<p><b>Participant 3</b></p> <p>Purpose to carry laptop and school work            I have used a backpack pretty much my whole entire life            Support vertical organization, vertical organization more efficient because you can see everything and easy to access            I didn't have a backpack on and it felt weird because I felt so light and free</p>
		<p><b>Carries calculator</b>            Compartments allow for organization and less likely to lose/misplace items            Travel usage            Backpacks are convenient way to carry lots of things            Backpacks associated with productivity            Backpack not for gym use            Backpack preference of small and compact because of the size of the participant            Preferred very compartmentalized            Chose to shop at REI b/c of brands            Patagonia brand backpack            Relatively cheap (under \$100)            Liked how the backpack has compartments            Satisfied with the backpack b/c of longevity            Preferred lightweight for comfort            Color matches with outfit choice            Color does not draw attention            Color hides dirt            Carries pencil pouch, charger, MacBook, notebooks, folder, wallet in the largest compartment            Uses side compartment to carry water bottle            Middle compartment has planner, passport, notebook, candy, tampon, tissues, hand sanitizer, calculator, extra hair, paper, lipprofol            Smaller compartment has snacks, retainer, mascara</p>
		<p>Would not use backpack to go out with friends            Would not use backpack if no intention to study with laptop            Would not use backpack to shop            Brand of backpack represent cause participant cares about            Wanted a backpack less sporty differing from what the participant had before            Backpack can be formal and casual            Backpack can be used for class or internships/jobs            Backpack is a grayish/neutral color            Color is neutral to wear and what participant wears            Simple backpack            I feel like I am more a minimal taste            Brown attached to backpack because of durability            Satisfied b/c of the size – not too big and bulky            Has small pocket for keys, pencils, chap stick            4 pockets total including laptop compartment            Carries wallet, water bottle, notebook, sketchbook, tampon            Places headphones in side compartment            Pack of gum, chap stick, highlighter, pens/pencil, Eraser</p>
		<p>Backpack usage all the time and every day            It's pretty rare when I don't have my backpack with me            Does not bring backpack to not think about school            Uses backpacks for hiking or biking            Definitely associate it with my laptop and carrying school work and things like that            Waterproof is a high priority feature            Open mouth top feature            Has a laptop sleeve            Inconvenient clip – extra two seconds to unclip            Clip affects ease of opening and closing            Carries helmet and pump            Carries laptop charger, phone charger, pens, bike tool, calculator            Laptop in neoprene pouch            Carries passport, water bottle, binder            Change of clothes            Carries a hiking backpack that isn't for school            Recognizes backpack is lacking in organization            Sleeve for water but puts laptop in there – creates own laptop compartment            There's two water bottle holders, which I have to say is the most</p>

Screenshot of the thematic analysis

Part C: Survey



*Screenshot of bar graphs constructed from survey results*