Perkins Hacks: LoKate It

LoTech & HiImpact

What is LoKate It?

Kate's Story

For Kate, a college student who is blind, going to the dining hall is a dreaded experience filled with uncertainty (despite her independence and orientation and mobility skills). With multiple food stations, unpredictable lines, and changing menus, Kate is never sure what or where her food options are. Once Kate manages to get food, she has to locate an empty chair and hope that her hard-won seat is not in the middle of an unwelcoming clique.

Fig. 1: With current dining hall set-up, people are compelled to form groups of 4 to 6, and sitting at the same table puts people in a personal enough position that interaction feels mandatory. This naturally promotes closed cliques.

Our Proposal

LoKate It is our LoTech approach to solve Kate's dining hall problem through accessible online menus and cultural change. We provide a framework motivated by universal design to make the dining hall experience better for everyone, including people who are visually impaired. The framework includes a universal website template for easily

publishing accessible menus and "best practice" layouts of dining halls to encourage social engagement.

We propose that, through changing the layout of dining halls, we can influence how people interact with the space. Two to four long tables that encourage strangers to sit together (but don't force them to talk if they don't want to) help foster a more inclusive culture where students aren't expected to ask permission to sit down.

After LoKate it, Kate can check the menu online before going to the dining hall and know it will be accessible. She can navigate to the different kinds of information using a screenreader that interfaces with the heading levels. The title is at heading level 4, and each meal is heading level 2, each food station that has a separate line is a heading level 3, and each food item is heading level 4 (in the order that they will appear in the dining hall). Images can be navigated by skipping through graphics, and all images have alt text. There she will also find a map that is described thoroughly in alt-text so that she will know which food item is where, and where to go. She can then go to the dining hall and she can choose whether or not to ask people what looks good—she has independence because she knows where everything is. She can then walk over to the seating areas and sit down at the first empty seat she finds at a long table (if she's got time to chat with others) or at an individual table or small group table (if she's in a rush or has a meeting). If she's having trouble finding a seat, one of the many people she's met by chance in the dining hall before will come say hello and invite her to sit and join the conversation.

Fig. 2: Community tables remove the necessity to ask for permission to sit, promoting a space where anyone can sit for whatever length of time they desire and with any level of interaction they want.

We chose this approach through considering the social model of disability—the idea that what makes people disabled is not a medical condition, but the norms, structures, and attitudes of society. We wanted to create an environment that fosters a more inclusive, helpful, and friendly culture, which would make the dining hall process a much better experience for all students, including students who are blind or visually impaired.

Kate found our model of the dining hall very useful to imagine how to navigate the space, and she suggested at we put it in the Disability Services office.
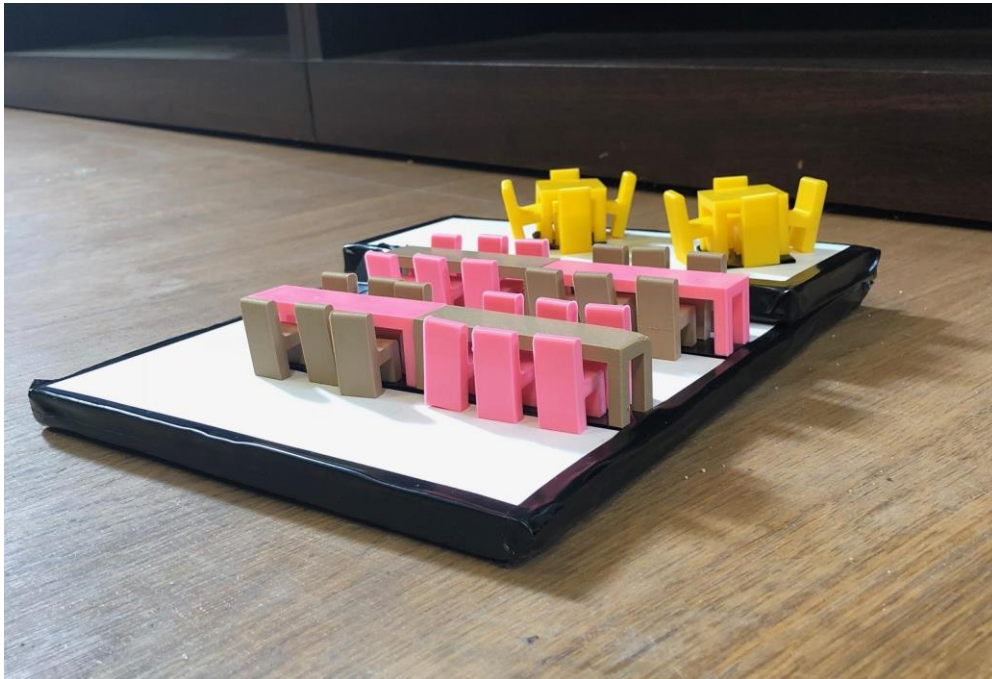

Fig. 3: 3D model of the proposed dining hall. This could be used as a model in the Disability Services office to provide a tactile, exact representation of what a person who is blind can expect when they enter the dining hall.

How Do Accessible Menus Help?

We present a standard for what information needs to be present on the menu (what food is available at which station, and what ingredients are in the food) and a template for how to meet that standard on a website. This helps all students, including students who are visually impaired, by allowing them to know which line to get in and what food is

available. The simple framework also makes it easy for a college to adopt, and the more colleges use our website, the more it will be recognized and accepted.

[Click here to see an online example of an accessible menu](#).

The heading levels of the menu allow the user to navigate via screen reader more easily to specific stations. The stations are listed in the order they will be encountered by someone traveling through the serving area, with descriptions of how to move from one station to the next. This will help the student find the station they want more easily. Once there, the next level of headings describes the food, again in the order (from left to right) they are encountered at the station, allowing for greater independence.

How Does Changing The Dining Hall Help?

When small tables are scattered throughout a space, it becomes natural for groups to separate into cliques and occupy most or all of a table. A person who is blind must then determine which of many tables is mostly likely to have room and also be willing to 'intrude' on another group's claimed space to find a place to sit. It is the classic high-school dilemma increased to absurd levels.

However, the current (and expanding) trend of community tables comes into play here. The idea behind community tables is that, rather than several small tables, the dining hall contains one or two large tables, where anyone can sit. Not only does this remove the awkwardness of trying to decide which is the best table to sit at—everyone just sits at the first available spot—but it opens up avenues for social interactions with people the students don't often speak with. For those who do not want to speak or interact, there isn't an expectation from the others at the table: "the seats at those tables are the ones that fill up the quickest and with a broader mix of people than you might expect… We can choose to engage with others at the table, or we can engage with our technology" (Tanyeri, 2013). This concept is increasingly being put into practice in restaurants and coffee shops, where millennials and younger patrons find the communal tables appealing (Lauser, 2017; T8N, 2016), and cafeterias form a similar space as these quick-service restaurants. Companies also are moving towards communal dining spaces, even encouraging eating at conference tables when they don't have cafeterias (HBR, 2016).

This doesn't solve the issue of not knowing who is already sitting at the table, or identifying friends in the space; however, it removes the need to ask permission to join someone else's space in order to sit and have a meal. It also changes the perception of talking to someone who is already sitting down as "intrusion," because in this space, that is normalized. In addition, it provides opportunities to forge new connections. It fosters

a culture where people become more comfortable approaching others and more comfortable with others coming up to them.

Why Not an App?

Several apps already exist to help people who are visually impaired or blind navigate spaces with posted text. There are computer vision apps (such as Seeing AI) or apps that connect you to real people (Be My Eyes) that can read and recognize text and, if pointed the proper way, can tell the user what the menu says in a dining hall. However, this means standing in the middle of the room, swinging a phone around as the student tries to center it in on the words. At that point, others approach to help, which negates the purpose of the app to begin with. Besides this, apps that involve any sort of extra hardware or connect the user with a person with sight are often cost-prohibitive, especially for traditionally broke college students. For example, Aira (which contacts a person with sight via glasses, eliminating the awkwardness of the phone) has its cheapest plan at $89 a month, which gives access to 100 minutes of time (Aira). This may seem like a lot, but if trying to navigate through the food service area and to a seat takes even just five minutes, and is done twice a day, almost $100 only buys you ten days of functionality. While this is a great app for some circumstances, it doesn't fit into this aspect of the college student's life. Costs for such an app cannot be expected to drop significantly, as they are purchasing someone's time. Expecting college dining contractors to maintain an accessible app (by adding location-specific information) may need a person on staff with that skill set, which may not be the case. However, most college dining halls maintain websites where they can fill out forms or upload already set menus.

We also feel that asking students to use and buy more tools just to navigate a space that they have every right to does not address the fundamental issue of inequity. The college has more resources than students, and it is in their interest to improve the experience for all their students. Having a collaborative community where students from different majors, friend groups, and disciplines can discuss ideas doesn't need to be limited to the classroom—it can be part of student life as well.

Who We Are

We are a team of four interdisciplinary students from Olin College of Engineering in Needham, Massachusetts.

Apurva Raman ('19) is an engineer with a focus in computing and design. She's interested in games, play, celebrating and embracing identity, and painting.

Kaitlyn Keil ('19) is an engineer with a focus in computing and a tendency towards adaptive design work. She also enjoys games, loves stories (both real and fiction), and appreciates spending time outdoors.

Lauren Pudvan ('19) is an electrical and computer engineer. She really enjoys design and finding solutions that consider social cultures surrounding the design. Every week in the summer she discovers a new set of swing sets in the area.

William Lu ('18) is an electrical and computer engineer who loves tinkering with robots. He cares way too much about fonts, film scores, photography, and a capella.

We all have a passion for universal design principles and are acutely aware of the differences between the social and medical models of disability. While we are all fully capable of engineering a shiny, "high tech" solution to this accessibility problem of getting food in a dining hall, we are deliberately choosing to envision and prototype a a "low tech" solution that digs deeper at the roots of the problem. A device or a piece of software that would help a person who is blind navigate a dining hall, figure out food options, and find a friendly seat only puts more burden (and most likely cost) on the person who is blind, while our solution aims to improve the dining hall experience for everyone while keeping accessibility at the forefront.

Resources

Lauser, Alisa, and Patty Wetli. "Chicagoans Say They Hate Communal Tables, But Trend Likely To Stick Around." DNAinfo Chicago, DNAinfo Chicago, 21 Mar. 2017
"Community Tables, What Are They and Are They Any Fun?" T8N, 28 Jan. 2016.
"Team Building in the Cafeteria." HBR, Harvard Business Review, 24 Aug. 2016.
Aira Plans
Tanyeri, Dana. "Communal Tables Catch on as a Flexible Seating Option." Restaurant Development Design, 1 May 2013

Example Furniture

Example Tables (from lowest cost to highest cost)

http://nationalpublicseating.com/products/product-category/single/?prod=28 , price not listed, likely quantity dependent

https://www.schooloutfitters.com/catalog/product_family_info/cPath/CAT583_CAT584/pfam_id/PFAM9920 $608.99 – $863.99

https://www.schooloutfitters.com/catalog/product_family_info/cPath/CAT583_CAT584/pfam_id/PFAM5233 $788.99 – $887.99

Example Chair

https://www.worthingtondirect.com/chairs/choice-series-stack-chairs-by-allied.htm $39.95, potentially less expensive in large quantities