An Observational Study

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Project Background:

Kiosk ordering systems are designed to provide a convenient, easy-to-use option for customers who wish to order food without employee assistance. Campus Dining centers: Food ordering kiosks provide fast-casual and sit-down spots with the option to offer students a way to order without the assistance of a server. For our observational research task, we decided to visit the UD campus Dining Service, Newark, DE, and monitor students who used the self-checkout "Create your own X" kiosks. We were there for almost an hour. We observed altogether of 20 students. We approached this assignment through a fly-on-the-wall technique. In this way, we were able to observe how students interact with this kiosk in a natural state without any intervention from us, the observers and our goal is to observe and record behavior within its context, without interfering with people's activities. The data we collected is also anonymized We chose this approach out of curiosity and convenience and were able to interact comfortably with the setting and make the observations we needed. An alternative approach could have been a kiosk in a public space outside of campus to observe all kinds of non-student users.

Research date: October 1, 2022 (Saturday)
Venue: Pencader dining hall, UD
Time: 7:00 to 8:30 (peak hour)

IRB Discussion

The University requires that all projects involving Human Subjects be reviewed and approved by the University's Institutional Review Board ("IRB") before any research is conducted. All matters pertaining to research involving Human Subjects must be submitted to the Research Office, which will facilitate obtaining IRB review and concurrence. We conducted research that would require an exempt review. We are carrying out category 2 research, which is defined as "research that only involves interactions with educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recordings)," under IRB Review Types: Exemptions. We must make sure that "The information acquired is documented by the investigator in such a manner that the identity of the human subjects cannot be readily ascertained, directly or through identifiers linked to the individuals" in order for this to apply to our research. This kind of research does not require participant consent. The University of Delaware IRB website contains a section on data management and record keeping, which states that "Exempt human subjects research does not require written documentation of consent, nor a request for a waiver of written documentation." Since our research required an

exempt review, this meant that we do not need consent from the participants. Although observational studies do not involve interventions, they entail ethical concerns, including threats such as breaches in confidentiality and autonomy, and respect for the basic rights of the research subjects according to good clinical practices.

The major ethical risks related to observation are consent, confidentiality, and safety issues. When using observation and interaction, if researchers neglect to obtain the consent of participants, then the subjects may not know what information is being used or about the observation process. Hence, it is still ethically smart to have consent from participants when their data is being used for research purposes even if consent is not required. Overall, for ethical reasons, researchers can never have too much consent, even when consent is not required.

Performing the User Observation

We broke down the use into the 2 tasks Order Customization and Checkout, as those were the main two steps that achieved a successful order.

Prerana Khatiwada:
- Number of observations: 12
- Age: Middle age(1F,2M), young(6M,3F)
- Gender: 4 female, 8 male
- Location: University of Delaware North Campus
- Self-checkout Kiosks: 2

Preliminary Findings/Observations
- During my observation, most people took the same approach to place their orders.
- I started my observation at 7:00 pm on Saturday and remained there until 8:30 pm.
- I chose to use this time frame because I know this was the peak time when students come to have dinner at that place. From previous experience, I know the line gets extremely long at that time.
- When I first started my observation there were only about 2-3 people in line. This continued until around 9:00 pm when a steadier stream of students was coming in and out of the dining hall.
- As far as the process of placing an order, it was pretty easy to follow and I did not notice anyone who was unsure of what to do.
- During the time I was there I noticed several "regulars" who did not even glance at the menu when placing an order. By observing students I got a good look into what the process entails. I would categorize all these students as "Expert Users".
- The major mode of interaction with the screen was with hands, mainly index fingers, and some also used their middle fingers to swipe through the screen.
- A lot of students knew exactly what they wanted and during the time frame I was there I did not witness any mistakes.
- The range of order time is from 30secs to 2 min. Those students' age is around 15 to 25. Also, a malfunction was found on one kiosk during the last 10 mins observation.
- During the time slot, a total of 20 students used these kiosks.
- There are 8 students whose order times are less than 1 mins.
- They selected determinedly without going through the whole menu in the entire process. Apparently, they decided on the item before and were familiar with the menu, even the position of each item in the menu.
- While some middle-aged people probably parents and guardians spent a lot of time going thru the menu and thinking about what they want. Their ordering time is longer than 2 mins. For example, three ladies keep rolling on the main menu on the side. Probably they were "First-time users".
- They repeat this action for more than 1 min. Seem they were looking for something from the main menu bar.

Summary/Analysis:
- Kiosks aren't what parents and guardians prefer.
- When using it, freshmen may have questions and sometimes require assistance from more experienced users. They require some direction.
- The kiosk facilitates item selection. You don't need to ask about the store's availability.
- The majority of them used their index finger, although some also used their middle and ring fingers. Hands were the primary means of communication.
- Tap, insert, or swipe may be quite confusing for novice users.
- Based on this observation, what I can conclude is that the main menu might be the critical factor to affect the order time.

Nabiha Syed:
- Number of observations: 8
- Age: Middle age(2F,2M), young(3M,1F)
- Gender: 3 female, 5 male
- Location: University of Delaware North Campus
- Self-checkout Kiosks: 2

Observations
- People were sometimes allowed to choose multiple, sometimes not.
- Expert users would complete tasks extremely quickly with the only issue being screen responsiveness with their fast touches.
- Non-expert users experienced significantly higher confusion with the menu, navigating back multiple times, pressing more items than allowed, and being confused when it didn't work, reselecting toppings.
- The interface might be a little confusing in the initial stage of selecting food items, there wasn't much of a description of the foods, just a very large blown-up background image as a select option.

Task 1: Order Customization

Breakdown:

This step involves selecting the items they want and customizing how they want their order:
1. Choose a food item (burger vs. eggs).
2. Cycle through the menu of available toppings.
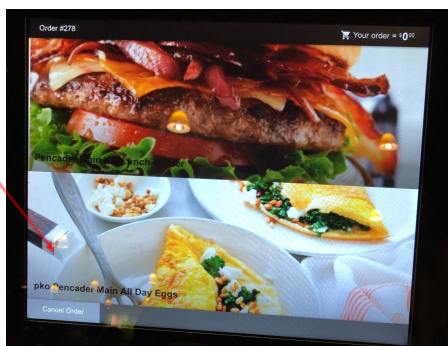3. Add and remove desired toppings.
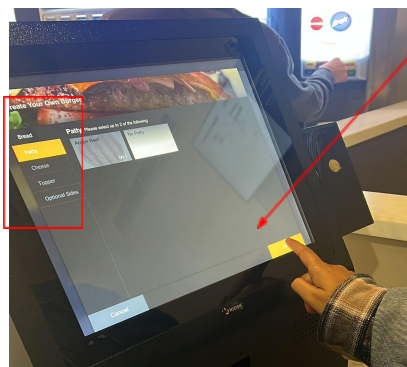

Fig 1: Selection of Food   Fig 2: Customization of Food

Challenges, Errors, and Successes

Low Severity:

1. Areas of the screen wear down due to repeated contact, blocking important information.
2. One screen seemed an unnecessary extra step and confused some users (they would select burger and another screen would show saying "create your own burger" in very unclear text), see below.
3. Cycling back through all the steps if the user changed their mind from burger to flatbread
4. The screen changes with every topping, so trying to remember what you picked and going back and forth
5. Realizing multiple toppings are allowed or not allowed
6. Knowing when to move forward.
7. Navigating back to add more foods to order (i.e. burger AND flatbread)

Error #2

Fig 3: Burger Confirmation Screen

Medium Severity:

8. The screen stops responding to touch sometimes.

High Severity:

9. Software issues may lead to certain features becoming unavailable.

Successes: Design is definitely simple enough to get the job done while providing most of the needed information.

Recommendations for Design

1. Change food images and descriptions.
2. Either remove the "Create Your Own Burger" screen or improve it to sound more responsive to user input, e.g. "You chose to create your own burger. Continue to customize."
3. Have an updated toppings summary on the side.
4. Have a popup before checkout asking if the user wants to add more foods, instead of requiring multiple orders
5. Have more animated features that prompt users to continue.
6. A sluggish kiosk can result from a spotty internet connection or poor design and the illusion of responsiveness matters. For example, when the user is completing their order the kiosk should display an animation to show that it's processing the customer's request.
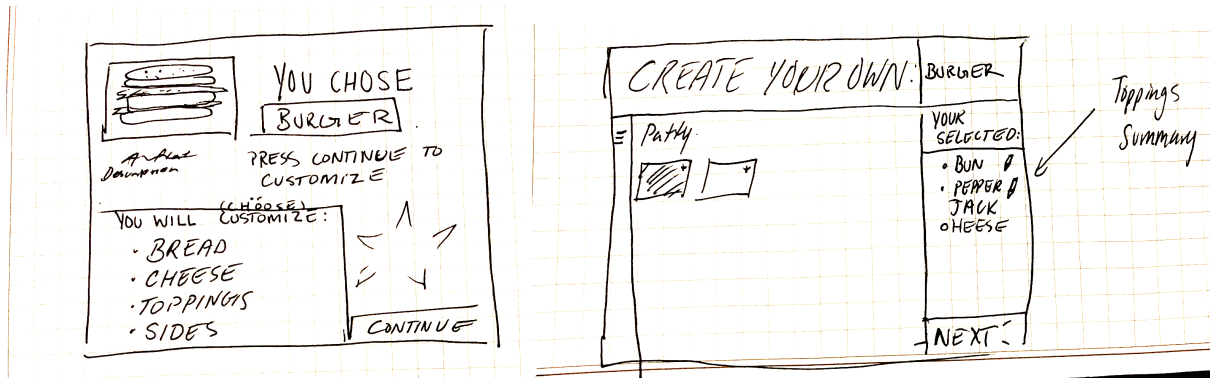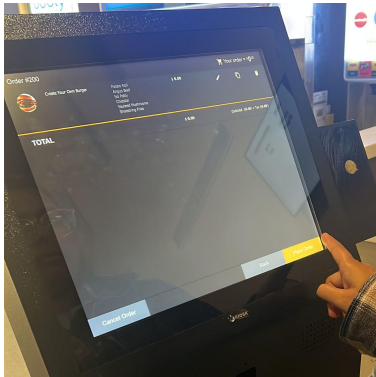
Task 2: Check out and Payment

Breakdown:

The last step is to place the order and make the payment without the need to involve a human cashier:

1. Entering name
2. Specifying "takeout" in order if desired
3. Pressing checking out

Challenges, Errors, and Successes

Low Severity:

1. The kiosk simulated an actual checkout process including payment, even though payment happens when guests swipe to enter the dining hall, so it may be confusing to first-time users whether they have to pay for an additional order to use the kiosk

High Severity:

2. Knowing how to specify takeout (user would have to type "takeout" after the name on their order, which is communicated nowhere at any point)

Successes: The checkout process is relatively smooth.

Recommendations for Design

1. Adding some kind of animation, let's say, if there's an animation conveying the kiosk is busy processing the customer's request, the customer will assume the kiosk is still responsive and not to worry.
2. Internet outages are inevitable, so we better plan for them. This doesn't necessarily mean the kiosk needs to function in "offline mode." At a minimum, there should be a screen/display to indicate to the user that your kiosk is out of order and offer advice on how to solve their problem. For example, "The kiosk is out of order, please pick up the phone in the lobby and dial #111 for assistance."
3. Have the "to go" checkbox for the takeout option
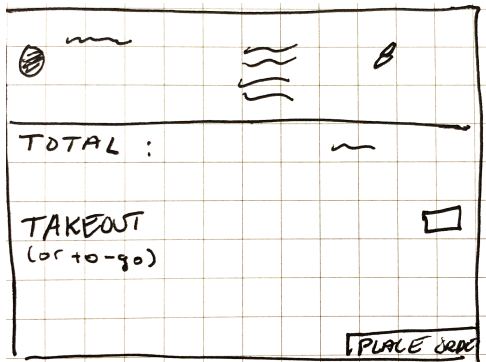
Concluding Remarks

Nabiha:
I learned about how observing people being confused helps understand little kinks and issues in UX. I didn't like the framing of this assignment as being an individual assignment yet still team/partner based, I think the instructions on how to create the deliverable in regards to that would've been helpful. This assignment could be improved in the future by being related to our projects somehow, or maybe creating more meaning in choosing to observe kiosk users.

Prerana:
I think such assignments and observational studies are a useful approach for learning first-hand about the behavior and interactions of people within a particular context. Since we're most interested in people's behavior, observing is the most important of these activities because it provides the most accurate information about people, their tasks, and their needs. Observational research may be time-consuming which I don't like about this assignment. This assignment could be improved by allowing researchers to do in situ surveys followed by interviews.