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Design Address on Phubbing During Dining

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Design Address on Phubbing During Dining

A Thesis

by

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Abstract

Phubbing is the practice of ignoring one's companion or companions to pay attention to one's phone or other mobile device. What happens when phubbing occurs in situations such as eating with friends? Phubbing instantly stops the interaction, and this unconsciousness behavior may affect the mood of one’s companions, destroy the taste of one’s food, or ruin one’s relationships.

Using a phone while eating is not a bad practice. People often use their phones to record the moment, to capture the delicious food, or to share information with others.

The best way to deal with hurt caused by phubbing during dining is not to prohibit the use of smart devices, but instead to provide an appropriate manner to use them.

In this thesis, I've designed a dining table decoration that features phone storage. This design not only provides a safe location to keep phones clean, but also gathers phones into one location so that if a user receives a mobile notification, the decoration will attract his or her attention to it. In this way, no one is the first to stop group interaction. By gathering everyone’s phones at the center of the dining table, accessing one’s phone becomes a group action. By keeping the source of notifications ambiguous, phubbing becomes more fun, and generates fewer negative feelings about the use of mobile devices during meals.

Keywords

Phubbing, Human Behavior, Dining, FOMO, Table Decoration, Phone Dock
Problem Area

As powerful smart phones have become part of our daily lives, we find people using them everywhere. Based on a Deloitte 2015 global mobile consumer survey in the US, 81% of people use their phones while eating at a restaurant. Moreover, 92% use their phones while shopping, 87% while talking to family or friends, and 54% while using public transportation. However, as using one’s smart phone is considered personal, enjoying smart phones in public generates the impression that one is snubbing others. Many have felt snubbed in a social setting when a companion looks at his phone instead of paying attention to others. The scenario above was defined as “phubbing” in a campaign by Macquarie Dictionary in 2012.

Phubbing has been widely discussed in recent years. For instance, one study showed that using cell phones in the presence of a romantic partner impacts the partner’s satisfaction with the relationship, and another showed that phubbing in a conversation was perceived as less polite and attentive, and resulted in lower-quality conversation. Yet another study demonstrated that the bonding and bridging social capital that occurs through communication and social networking apps is found to significantly reduce social isolation.

Several research studies discuss why phubbing is common in contemporary society. Varoth notes internet addiction, fear of missing out (FOMO), and lack of self control as factors in our addiction to mobile devices, and Lee found that the compulsive usage of smart phones is tied to an external locus of control, materialism, social interaction anxiety, and the need for touch.
Literature Review

Smart Devices Are Part of Our Daily Lives

The number of people who use mobile internet-connected smart devices was over 2 billion in 2016.\(^1\) Furthermore, almost 2 billion people use e-mail and read news on a mobile platform; approximately 1.9 billion use social networking services; and more than 1 billion use online banking, instant messaging software, music streaming, map services, and online job search engines. These numbers demonstrate that more and more people use mobile networks to engage in daily activities, a trend that has changed the activities of mankind and shapes daily life.\(^1\) Two years later, in 2018, Americans viewed their smartphones about 14 billion times per day, and they use their phones for almost every online activity. Smartphones have become so indispensable that some consumers fear that they use them too much.\(^2\)

Why Smart Device Overuse is Rampant

With the convenience of the powerful features of phones, and considering the significant gratification that phones provide, people now take their phones everywhere and constantly check their phones.\(^9\) Smart device overuse has been widely discussed. Many researchers have become increasingly concerned about the potential adverse effects of phones on mental and physical health. Researchers have also studied social behaviors to explain why people use their phones so often. Deursen found that lower self-regulation is highly related to addictive phone behavior;\(^10\) and Lee found that an external locus of control and materialism are other influential factors that promote phone addiction.\(^11\) Additionally, Sapacz found that addiction proneness and social anxiety significantly predicted high cell phone use.\(^12\)
Phubbing is Part of Smart Device Overuse

This research focuses on one aspect of smart device overuse that is particular to social behavior—the concept of “phubbing.” This term was coined to describe the act of snubbing others in social interactions to focus on one’s smart phone.[3] Recent research has demonstrated that phubbing affects interactions. For instance, using cell phones in the presence of a romantic partner impacts the partner’s satisfaction with the relationship,[4] and phubbing during a conversation is perceived as less polite and attentive and is perceived to lower conversation quality.[5]

Phubbing in Dining is the Design Target Area

As phubbing happens almost everywhere, to focus the problem more precisely, I formulated the table below, which includes several scenarios that compare distance and relationship.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Distance</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech/Class</td>
<td>Far but Fixed</td>
<td>One to Many Known</td>
</tr>
<tr>
<td>Bus Stop/Shopping</td>
<td>Various</td>
<td>One to Several Unknown</td>
</tr>
<tr>
<td>Eating with Others</td>
<td>Close and Fixed</td>
<td>One to Several Known</td>
</tr>
</tbody>
</table>

Table 1
My interviews revealed that phubbing during meals has the largest direct impact on people. Research published by the website stopphubbing.com demonstrates that an average restaurant sees 36 cases of phubbing per dinner session. Moreover, 97% of people claimed that their food tasted worse when they were a victim of phubbing. Because of this data, I chose to focus on the problem of phubbing during restaurant dining.

**Current Solution to Phubbing**

There are several solutions on the market that seek to reduce phubbing during dining, such as the Phone-Less Table from IKEA, which uses phone as fuel to heat the hot pot so that people cannot reach their phones if they want to eat quickly. Other examples include Chick-Fil-A’s “Cell Phone Coops,” bags in which people store their phones while eating; the phone stacking game, in which whoever touches his phone first pays the bill; or putting one’s phone in a bag under the chair during meals in a nice restaurant. All of these solutions work; however, they all require people to stop using their phones while eating. These solutions might generate the fear of missing out (FOMO), and some level of anxiety caused by separation from one’s digital life.

**Phones Are Not Harmful During Interactions**

My survey data indicated that people think that phone usage could be considered as a good way to improve interpersonal interactions. The model might be Stahcer’s drawing “After Rockwell,” in which people gather around the dining table together and are happy because photo or information sharing, entertainment, and finding topics to chat about with friends enhances the dining interaction.

**The Solution for Phone Usage**

As the old saying goes, “Water is a boon in the desert, but the drowning man curses it.” Phones are not the primary cause of phubbing; people who choose to overuse their phones are the cause. This thesis aims to develop a design that could decrease the sense of phubbing while allowing people to check their phones if necessary.
Ideation:

My brainstorming began with research of phone Use and Gratification (U&G) theory and FOMO. I determined that I would not prohibit people who wanted to use their phones while eating with others from doing so while considering the feelings of others. Picture 2 displays the list of all the situations and information I uncovered by playing different roles and by interviewing people in order to gain a clearer picture of the phubbing issue. This Picture also displays why people want to use their phones, and which applications they use. I then began the first ideation.
In the first ideation, shown in Picture 3, I divided my ideas into six groups:

1. Noticing phone use, including how noticing phone use informs the user, and new ways of noticing phone use.

2. Varied personal thoughts among frequent phone users and others.

3. The need to modify interactions, including interactions between people and between phones and users, to create common experience.

4. Manners, such as asking a friend for permission to use one’s phone, and reasons for which people might not use their phone during meals.

5. The need to maintain connection, including the feeling of connectedness to your digital group, and how to use mobile devices to make people feel connected.

6. Entertainment, including how to make eating more attractive to participants.

Among these, 1, 2, & 4 are related to the feeling of phubbing, while 3, 5, & 6 are design directions. None of these approached product design.
Based on the results of the first ideation, the second ideation created a physical product design, which is shown in Picture 4.

1. The symbols communicate the sense of connection and belonging, such as the bridge and bonding.

2. The design provides a warm feeling to ensure that phone users consider themselves still connected with their digital world while eating. The design promotes interaction with friends, and the design helps users sense the connection.

3. I aimed to allow phone users to realize the fear of loss, including design that addressed the fear of missing out.

The second ideation result is closest to the physical product design, and includes more ideas such as food insulation, photo shooting, time loss, and maintaining a clean environment while eating. Yet the direction of the design concept was still not clear enough. Before moving to the third ideation, I realized that having a more precise definition of phubbing might help, so I redefined the phubbing problem, as shown below:

1. Phubbing is a feeling that others have that is generated by different expectations of interaction in the moment.

2. Phubbing is an instant feeling that is transformed into different emotions. Most of these emotions are unpleasant because people don't accept phone usage as part of eating. However, phone usage could be considered to be acceptable in some circumstances.

3. Phubbing occurs with the observation of a focus shift, including eye contact or the act of reaching for a smart device, but if one is occupied with eating or staring at the wall, this act will not generate the feeling of being snubbed.
The result of the third ideation included seven design concepts, which are explained below:

1. The Dining Etiquette & Utensil Design makes people consider phone usage as a part of eating while encouraging the modification of perception toward phone usage. This may generate a lessened sense of phubbing during eating.

2. The Interrupt Phone Dock Design attempts to break the moment in which only one person checks his phone, which stops the interaction among all diners for a moment. When everyone checks their phone at once, it equalizes the interaction expectations among everyone, which may work to prevent the sense of phubbing.
3. The Food Protection System is designed to separate phone usage from eating. Your phone must be stored while eating, and your food will have insulation protected by the cover, so your food will not cool quickly if you spend too much time on your phone.

I selected the Interrupt Phone Dock Design to continue design study and testing, because in my imagination, this device directly deals with phubbing by breaking the moment of phubbing to prevent diners from feeling snubbed.
Interrupt Phone Dock Design with Phone Vibration

The idea here was to design a set of plates on which people can place their phone while eating, and no matter who receives a notification, all plates will vibrate to distract everyone’s attention. I played with the orientation of the phone and decided to use the lying angle near horizontal so that if someone wanted to check their phone, they needed to act to see the information.

The product design can be found below:

Next, I began work on a module that could sense the vibration of a phone, which would trigger the vibration of all plates. After testing, I discovered that the phone vibration was not
strong enough to trigger the sensor, and various orientations of the phone made a strong difference in performance. To make the vibration work, it would need more force. Yet this idea made users feel annoyed. People that I interviewed mentioned that the vibration did disturb the interaction, but that it would irritate people if only one user continually received notifications, or if the notification occurred halfway through the interaction.

At this stage, it seemed that only increasing the vibration was not the right direction, as this would also amplify annoyance. After analysis of the design concept, I found that current phone vibration levels are strong enough to arouse people’s attention. The reason that this design did not work is because I stored user’s phones in separate locations.
Center Phone Space Design with Phone Vibration

While testing for the first design, I arranged a survey to ask people which location on a basic 30" x 30" dining table is the best place to interrupt interaction among diners. Almost everyone stated that the center of interaction is the place that would cause the greatest interruption, and that place is the center of table. Rather than build separate plates to store phones, I decided to create a space to place phones in the center of the table. The picture below shows the original simple idea—placing a bowl in the center of a dining table in which people store their phones. Unlike in the stacking game, when the vibration occurred, it would distract people easily, but people would not know whose phone had vibrated in the bowl.

To gain feedback about the new user scenario, I arranged user testing with the instructions provided in the following two pages.
Test 1 Phone in box (please find a quiet dining area)

Please help if you will eat with others in restaurant, like friends, family, colleague etc.
1. Find a Box that is big enough to put several phones (depends on how much people eat together) as picture below, close the cover or not both ok.

![](image)

2. As soon as you reach the dining table, please place this box at the center of table, and ask people to turn their phone into vibrate mode and put their phone into the box.
3. during eating:
   3.1 If there's no vibration happened, then keep the phone stay in the box until the end of meal. **but people could take it out by asking other's permission (each time is 5 mins MAX)**
   3.2 If there's vibration happened, people could decide check the phone in the box or not.
      3.2.1 If yes, People could check their phone, and then put it back (each time is 5 mins MAX)
      3.2.2 If no, then keep phone in the box
4. repeat the action till the end of meal, return their phone.
5. Please take a picture of the box and send to sh3714@rit.edu to me.

**PS. 5 mins means short time, no necessary to time it**
Questions : For everyone.

1. how long did this meal take? _______ mins
   1.1 who were you eating with?
       _____ friend _____ your family _____ colleague _____ significant other _____ stranger

2. how many times did the box vibrate you noticed? _______
   2.1 how many times did you chose to check your phone in the box? _______
       2.1.1 If you did check your phone, how many times did you find out it's not your
           phone that vibrate? _______

3. How many times did you ask to use phone? _______
   3.1 if so, What did you do with it?

___________________________________________________________________________

3.2 What did you feel while
   asking?________

4. Compare with the dining in the past, which dining situation do you like better?
   _____ The phone in the box
   _____ normal dining in the past
   _____ both are the same
   and please provide your reason

5. Fear of missing out (FOMO) is a feel of being disconnected with something.
   Do you feel FOMO while doing this test? _____ (0 - 5, 0 means none, 5 means the most)

6. Phubbing is the feeling that you get while your companions paying attention to his phone
   rather than you.
   Do you feel Phubbing during this test? _____ (0 - 5, 0 means none, 5 means the most)

7. What did you feel while you notice the box was vibrating?

___________________________________________________________________________

8. What did you feel while you decided to or not to check your phone?

___________________________________________________________________________

9. What do you feel about putting your phone in the box? why?

___________________________________________________________________________

9.1 Is there any function that the box has would make you feel better

___________________________________________________________________________

Test Page 2
### Table 2

<table>
<thead>
<tr>
<th>Test Results</th>
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<th>9</th>
<th>8</th>
<th>7</th>
<th>6</th>
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</tbody>
</table>

**Note:** The table above represents the test results provided in the document. Each column corresponds to a test result, and the values indicate the frequency or occurrence of each result across different conditions or trials.
A summary of the test results can be found below:
1. All the tests were completed in a casual restaurant among friends.
2. The average dining time was one hour.
3. Unless the testing place was quiet, people could not hear the vibration.
4. Several people replied that their phone is personal, and refused to store their phone in the box.
5. Around 80% of people think either that using the box creates a better dining experience or that it makes no difference.
6. No one asked to use their phone during the test.

The test results demonstrate that current eating time is short. Yet if the design limits the usage of phones, people would still feel FOMO, because most testers checked their phone immediately after the test. The idea of creating an area in the center of table to store phones seemed widely acceptable, yet several people think that storing everyone's phones together is not appropriate, and that the box could make people feel pressured to ask to use their phone during the meal. The test results also demonstrated that the vibration is not strong enough to be noticed, because the distance between the phone and user makes the vibration interruption weak. Therefore, it was time to consider that the light of the screen could be another way to amplify interruption.

**Current Phone Holder Design**

Some design language tells the user where to put his or her phone. The strongest language indicates where the user should charge the phone, which includes the familiar logo of charging or the cable itself. Yet it is not only the language but also the function that makes this recognizable. Many modifications of the angle shape and slot exist, which are recognizable shapes as well.
Even though cables and charging ports mark the most direct mobile language, considering that the target customer is restaurants, if the main design included electricity, this could cause issues and could cause people to stay longer. After an interview with several restaurant owners, I decided to design a shape that tells users to place their phone there as my design direction.

3D Shape Design Sketch

With the iconic shape of the phone holder in mind, I began to create 3D model sketches. At the beginning, I attempted to combine the holder with current table decoration or utensils that appeared on the dining table, such as condiment caddies, plates, and table papers. Considering that the phone might be used during the meal, several of these models worked poorly. For example, the first model stored the phones next to dishes and easily became dirty during dining. The second model is a table paper design that would cause trouble to the waiter; moreover, two phones stored next to one another on the table takes up significant space. The third model of the plate holder has the same problems, as well. The last model is the direction that I selected, and I decided to design a model incorporated with dining table decorations because of its obvious iconic shape and because it had the smallest dimension demand due to the overlap of phones.
After making the 3D model sketch, I made the model out of wood. The model is a table decoration with phone storage that overlaps vertically. The pros of this model are that it is small and keeps the phone safe. However, it has many cons, including that it covers the whole phone so that people can't see notifications, and that it is difficult to store and remove the phone. Moreover, the design looked enormous on the dining table.

Determined to allow people to be distracted by notifications on their phones, I shrunk the size and shape of the model to a 3.5 inch diameter circle. This smaller size holds phones steady and only partially covers the phones, so that when a user receives a notification, everyone could see the screen glow. Considering that normal rectangular tables seat up to four people eating together, I increased the number of slots to four so that the model had four directions to store phones. I also adjusted the height of the slots. The height keeps the phone higher than the dishes, but is not so large that it blocks you from seeing the people in front of you. Picture 27 displays the final design 3D model.
Wu Ji Table Decoration Design

Final Design Process
1. Prepare a wood block sized 3.5” x 3.5” x 7” and use a pencil to mark the location of the slots.

2. To avoid peeling in the final wood piece, mill the slots out with a 1/2 inch drill bit, and mill each slot with 90 degree rotation.
3. After milling, the peeling will appear on the surface of the block, but that part will be turned away. Place the 1/2 inch wood block back on the body to prevent a crash in the upcoming step.

![Picture 30](image)

4. Set the piece onto the lathe machine and turn it slowly to remove the filled block first. Then, turn the whole piece into a 3.25 inch cylinder.

![Picture 31](image)
5. Sand the top and bottom to remove the fill pieces. Consider the wood grain direction, as the lathe machine's turning direction will leave scratches even with the finest sandpaper. Use sandpaper to sand, following the wood grain by hand.
**Final Design**

*Wu Ji* is a decorative phone holder with four phone slots that allows phones to be stored horizontally in four directions.

Each slot is two inches deep and 1/2 inch thick, which is large enough to accommodate various phone models at an appropriate height.
The screen is only partially covered, which enables the user to see mobile notifications. All phones are stored at least three inches higher than the plates, so that users no longer need to worry about moving their phones out of the way when their food is served.

By gathering phones at the center of the dining table, accessing one’s cell phone becomes a group action. When the source of mobile notifications is ambiguous, the process is more fun, and generates fewer negative feelings about the use of phones during meals.
Conclusion

There were several challenges in this thesis research. The first and most significant challenge was analyzing phubbing. After completing my research, my interpretation of phubbing is that it is not only when one uses one’s phone to snub others, but is also the feeling that others have when they feel phubbed. Therefore, the research direction of this thesis work emphasizes how to deal with the feeling caused by feeling phubbed.

The second challenge was creating an idea that did not attempt to solve the problem of phubbing by removing the phone from the dining table. Removing a phone might be the simplest way to deal with phubbing; however, this may cause other emotional issues such as FOMO. Additionally, I found that people have always snubbed others with different behaviors, although today phone snubbing is the most common. Through my research on phubbing, I have discovered that user behavior makes others feel phubbed, and that the mobile phone is only the contemporary medium. Therefore, a product to help modify phone-using behavior during dining became the design target.

The next challenge was the product design. One option was to choose an iconic design that tells people that the product is designed to store their phones. Instead of functional features such as charging signs that directly link to the phone holder, I found that the shape of slot is also common for phone users. The second challenge was considering the space limitation of the dining table. In order not to increase the trouble to both waiter and diner, I found it better to stack phones vertically and higher than the serving dishes.

The last challenge was the product-making process. Even though the shape of the product seemed simple, dealing with wood was not as simple as I imagined. Because of the structure of wood, after testing, I discovered that only hard woods such as walnut could survive the process without peeling at the edge. To avoid peeling during the construction process, I learned and tried several process flows, and the outcome was positive.

The process of thesis work is the practice of what I have learned from my study of industrial design, and I am glad that I selected this complex topic as my thesis work to help me recover these design tools. This is a nice conclusion to my Master’s program and a solid starting point to my life as a designer.
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