
Meal Chat: Promoting Mealtime Social Interaction for College Students

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Abstract

Mealtimes serve important social functions in our everyday lives. Public dining spaces on college campuses are positioned to be social and engaging spaces to make new connections. With the prevalence of digital devices, technology usage introduces new dynamics into students' mealtimes. In this study, we explored the current mealtime technology usage patterns of college students and rethought the role of technology in eating. We proposed Meal Chat – a technology probe to explore the alternative role of technology during mealtimes by encouraging social interaction for students eating at on-campus public dining areas. Meal Chat aims to provide an opportunity for college students to socialize and reduce the barrier of starting mealtime socialization with a stranger. Rethinking the role of technology in mealtimes, Meal Chat seeks to prompt rather than to replace social interaction during mealtimes.

Author Keywords

Mealtime; Technology Use; Social Interaction; Mealtime Technology; College Students; Technology Probe.

CSS Concepts

•Human-centered computing~Human computer interaction (HCI)~Empirical studies in HCI

1. Introduction

Mealtime is a social activity in everyday lives, especially for college students. On-campus dining halls are often packed with students eating and chatting with each other. Research has shown that social activities have stress-buffering effects and strong positive impacts on students' wellbeing [7,10]. Students with high social support evince greater health under stress than those low in support. However, we see an increasing number of students eating alone at campus dining areas and relying on technology as a distraction when eating. What causes technology usage in this context? Can technology be designed to help support students in mealtime socialization? If yes, how? We delve into these questions through a human-centered design process. In this paper, we will first describe the research methods used to understand the current technology usage patterns of students around mealtimes. Then, we present the preliminary research findings and our proposed design for a technology probe. We conclude the paper with discussion of future design and research implications.

2. Backgrounds

Research has explored technological practices during mealtimes in family settings [3–5]. Ferdous et al. conducted observational studies to examine 6 families on how the presence and usage of technology have impacted the social interaction of their mealtimes [4,5]. Findings reveal that use of technology can have both positive and negative impacts on the social interactions during family mealtimes. In particular, personal technology such as mobile phones can create tensions between family members. Following up on these findings, Ferdous et al. proposed technology that support special occasions and facilitate mealtime

interactions (e.g. interactive table [11]).

Olsson et al. contributed a study of 92 publications on the role of technology for collocated social interaction [9]. Design approaches are suggested to consider the social objectives as well as the role of technology to invite, encourage, and facilitate the interaction. In this research, we build on the understandings of technology used in family-based shared mealtimes and design suggestions for enhancing collocated social interaction to examine technology usage at mealtimes in college settings.

3. Preliminary Studies

We conducted public observations, surveys, and in-person interviews to investigate both general technology usage patterns at mealtimes and students' attitudes and awareness on how they spend their mealtimes. We then synthesized and analyzed data and developed insights to inform our proposed design.

3.1 Method

3.1.1 Public Observation

Five observations were conducted at three popular on-campus dining locations at Indiana University. We observed students' dining experience during 3 lunches and 2 dinners for 4 hours in total, taking notes of behaviors such as whether students were eating alone or with others as well as what activities were performed on their technology.

3.1.2 Survey

We then designed and deployed an online survey to distribute amongst graduate and undergraduate students. Our survey consisted of 12 multiple-choice questions that asked about students' current dining patterns, including the frequency and attitude of

mealtime technology usage. We collected responses for 10 days and received a total of 39 responses.

3.1.3 Interview

We conducted 10 interviews (each took 20-30 minutes) with undergraduate and graduate students. We took a semi-structured interview approach and asked participants to recall the most memorable or enjoyable mealtime they have had on campus. Participants all provided consent for audio recording for the interviews. Due to time constraints on participant recruitment, our interviewees comprised of primarily female interviewees (7 out of 10) and primarily graduate students (7 out of 10). We strived to recruit both domestic (5) and international students (5) to account for cultural differences.

We transcribed interview recordings and conducted open coding, during which two of the authors synthesized key insights from the transcriptions [1,2,6]. In the next phase of analysis, two researchers reviewed the audio and transcriptions, refining the coding schemes through iterative comparisons of the coded data. A summary of overall themes and key insights was developed collaboratively between four researchers, reconciling codes from each round.

3.2 Findings

Our findings showed four themes of mealtime technology usage among college students at on-campus dining halls: (1) Frequency of Mealtime Technology Usage, (2) Attitude of Mealtime Technology Usage, (3) Cause and Purpose of Mealtime Technology Usage, and (4) Social Interaction and Enjoyable Mealtimes.

3.2.1 Frequency of Mealtime Technology Usage

We found a consistent and wide usage of technology among students eating at university dining halls. However, we also found a distinction of usage between students who eat in groups vs. alone. Students sitting with friends mainly socialize with each other when eating, while those eating alone spent most of their attention on technologies. For students sitting and eating in groups, technology usage was less frequent compared to people eating alone.

Our survey results also supported this finding. All respondents reported using technology when eating and 90% (35 out of 39) of respondents indicated that they use technology more when eating alone than when eating with others.

3.2.2 Attitude of Mealtime Technology Usage

Besides difference in frequency of usage, students had different attitudes towards using technology when eating alone vs. with others. 82% (32 out of 39) of students surveyed said that they felt negatively about others using technology when eating in groups. However, only 10% (4 out of 39) of students surveyed felt negatively about using technology when eating alone. This difference between attitudes was also confirmed in our interviews with students. The majority of interviewees (8 out of 10) specifically mentioned using technology was inappropriate and should be limited when eating with others; using technology was acceptable and even useful when eating alone.

3.2.3 Cause and Purpose of Mealtime Technology Usage

Our survey result showed that students primarily used technology for entertainment (85%) and communication (36%). Students viewed mealtime technology use as a

social buffer for easing feelings of boredom, loneliness, and awkwardness when eating alone.

*"I feel like it's acceptable...there's no one else really to engage with. It's **something to keep you preoccupied**. Otherwise, you're just like looking at your food... I wouldn't know what to do."*

--Graduate student, Male, Domestic

*"I like doing it because I'm bored when I eat alone... I feel like **eating should be shared with somebody else** so I'll get online and eat or watch YouTube videos and eat to **feel like I'm with someone else during my meal**."*

--Undergraduate student, Female, Domestic

*"There's hardly any time where I would sit quietly and just eat...I have to do something. I feel like **it's a little boring if you have nothing interacting going on around you... like someone to talk to**. Sitting all alone and eat feels very **depressing and lonely** to me."*

--Graduate student, Female, International

3.2.4 Social Interaction and Enjoyable Mealtimes

We found that students considered social interaction a key to enjoyable mealtimes. When asked to reflect on their eating experiences, all interviewees identified elements of social interaction as significant factors that made mealtimes enjoyable. If given the option to choose, all students reported that eating with others, especially friends and family, was preferred than eating alone.

*"...if you eat with people, you talk about the food and you pay more attention to the food and the conversation, rather than just fixing your hunger level. I enjoy my meal more because of **the people** I'm with."*

--Graduate student, Female, Domestic

*"The most ideal meal would be **no technology usage** at all, but just have **the closest people** with you."*

--Graduate student, Female, International

Findings from public observations, the survey, and interviews helped us gain a better understanding of how students use and view technology in mealtimes. Technology is commonly used as a buffer to fill the gap of boredom and absence of human interaction. Social interaction is a key factor for enjoyable mealtimes. Facilitating shared eating experience has the potential to help with mealtime socialization among students.

Our findings also revealed an underlying interest and need of socialization for students eating alone at campus dining halls. These students often wanted to talk to friends and families and tried to avoid having to eat by themselves. Since this may not be possible due to people's busy schedule during school days, we looked into supporting social interaction for students by encouraging shared mealtime among students who share the same interest. This leads to our design of a technology probe for facilitating social interactions for on-campus dining experience.

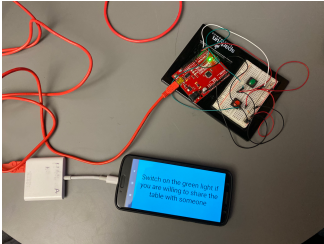


Figure 2: The working prototype on exhibition, waiting for user input.

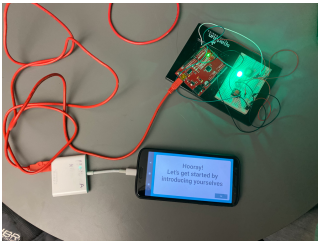


Figure 3: User input is given to the prototype. Green light is turned on after user presses on the green button, indicating the student is interested in eating with a stranger.

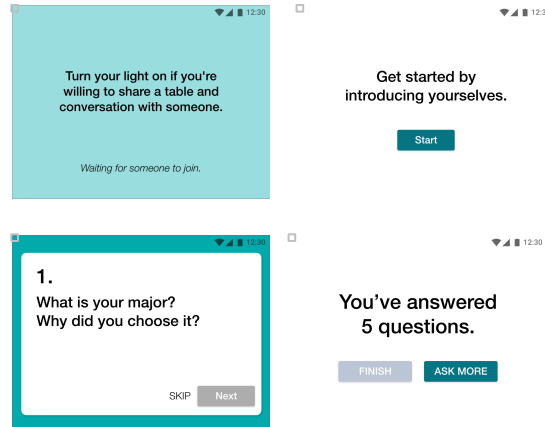


Figure 1: User interfaces of the mobile app for Meal Chat. Top left is the landing screen. Bottom left represents a sample screen of a question from the conversation starter.

4. Technology Probe Design - Meal Chat

Our proposed design is Meal Chat, an interactive prototype to encourage and support social interaction for students eating at on-campus dining halls. Inspired by Hutchison et al. using technology probe to create technologies for families[8], the goal of Meal Chat is to understand how technology can be used to facilitate mealtime socialization.

Meal Chat consists of a physical tabletop prototype and an Android mobile application. The physical prototype (Figure 2, 3) is built with the Arduino UNO toolkit [12]. An open-source library, UsbSerial [13], is used to establish a connection between the Android application and the physical prototype. The Android application (Figure 1) serves as a conversation starter which can be displayed on tablets or phones to facilitate initial conversations between students.

The physical tabletop prototype includes red and green buttons that students can interact with to signify whether they are interested in chatting with a stranger while eating. Once two students sharing a table turn their lights to green, the application will prompt the users to introduce themselves.

If the students choose to use the application for conversation support, the app will randomly display 5 questions for the students to chat about, with the goal of generating natural conversation flow. Each question shows up on the display for 30 seconds, and the two users can move on to the next question or have follow-up conversations based on the question. The application is designed with the goal of easing the awkwardness and barriers of chatting with a stranger. Once people are more comfortable talking to each other, the display automatically progresses into a “sleep mode” to avoid distracting people from their conversation (Figure 4).

We created an experience prototype (Figure 5, 6) to evaluate the design concept with 3 pairs of students, simulating the dining experience. Overall, students were positive about our design concept and valued the use of Meal Chat for easing the awkwardness of finding dining partners and conversation starters. This preliminary feedback shows the potential of using technology to support mealtime social interaction and rethinking the role of technology as social facilitators at mealtimes.

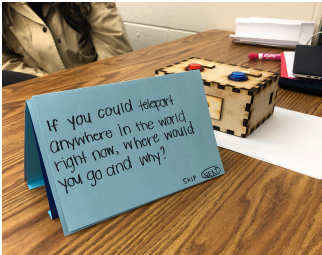


Figure 5: The experience prototype materials.



Figure 6: Participants engaging with our experience prototype.

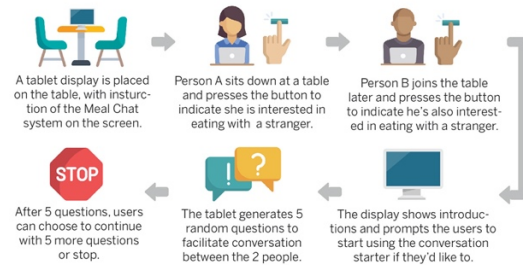


Figure 4: The interaction flow of Meal Chat, icons are not the exact form of the prototype ©Freepik¹.

*"There's a lot of times where I'm sitting there and I kind of wish that someone would sit down with me. I wonder if people actually would want to chat or if they're just being polite. This design **helps ease the awkwardness** of starting a conversation."*

-- Graduate Student, Male, Domestic

5. Conclusion and Discussion

In this paper, we investigated the on-campus dining experience for college students from a social perspective. We looked at why and how students use technology when eating, and what it means for students to have an enjoyable meal on campus.

Through iterations of user research, we found that social interaction is key to an enjoyable mealtime. However, technology is often used to replace the presence of others when social interaction is not available. Meal Chat is an attempt to re-examine the role of technology in students' eating experience.

Instead of being a distraction or replacement of social interaction, Meal Chat explored the possibility of technology as a catalyst and aid to stimulate social interaction, which can potentially lead to positive influence of student mental health.

Utilizing Arduino toolkits and Android application displays, Meal Chat aims to provide an opportunity for college students to socialize and reduce the barrier of sharing the mealtime with a stranger. Preliminary studies have shown potential to adopt this technology probe as a social facilitator for students. This technology probe also helped us examine alternative roles of technology at mealtimes. The prototype is currently designed for 1-on-1 social interactions. Moving forward, there is a potential to extend the capability of Meal Chat to support group conversations. Further in-situ user studies are necessary to better improve and evaluate the design.

We believe designs like Meal Chat can provide meaningful and innovative ways to promote and support mealtime socialization for college students eating alone at on-campus dining halls. Future research should continue to explore the roles of technology in eating contexts and the designs of campus public places, such as dining halls, to support social interactions and wellbeing.

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¹ Icon made by Freepik from www.flaticon.com

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