

# Exploring Non-Use and (In)Appropriate Technologies

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## ABSTRACT

Most research in human-centered and social computing focuses on when and how people use technology. We provide a brief overview of three qualitative: research studies that investigate aspects of technology non-use in three very different contexts: graduate students adopting an eReader for academic reading, practitioners of meditation and how they track practices and use video chat.

## INTRODUCTION

Most research in human-centered computing focuses on when and how people use technology and yet tends to ignore or at least shy away from explorations of technology non-use. Despite the label “human-centered computing” within which states that the human is at the center, research within HCI is actually research on computing-centered human behavior. If we are honest about wanting to shift the balance in human-computer interaction to put the human at the center, we must also take seriously the idea that non use of technology is just as interesting and important as non-use.

Below, we briefly sketch out three qualitative research studies that explore use and none-use in three very different contexts: graduate students trying to use an eReader for academic reading, practitioners of meditation and tracking and video meditation technologies, and low-income shoppers who barely use technology at all.

## NON-USE IN THREE DIFFERENT STUDIES

### Study 1: Graduate Student Adoption of an eReader

Our qualitative study investigating how graduate student’s academic reading practices changed when provided with an eReader [1] found that the vast majority of participants gradually stopped using an eReader because it did not support the particular ways in which they like to use academic texts.

In 2009-2010, all first-year Computer Science & Engineering (CSE) graduate students at our university received Kindle DX e-readers instead of course packs and printed textbooks. We interviewed 39 students, most of them were interviewed twice during the academic year.

Unlike with leisure reading, the graduate students in engaged in very particular navigation and reading micro-behaviors that involved moving back and forth and up and

down in a text and between figures, texts, indices, table of contents, etc. The device also failed to support many annotation behaviors. Consequently, over the course of the study we saw more and more instances of non-use as students resorted to books. Thus, we found that exploring the reasons for non-use were, in fact, very illustrative of what the shortcomings of the existing technology were and what needed to be improved.

Our findings were taken up by the press to caution against a rush by schools e-reader and to posit that perhaps e-Readers were not as beneficial for students that many educators and school administrators might first have thought them to be.

A part of our study that did not garner as much attention but that was also very important was the finding that some students continued to use the e-Reader even though they made fewer annotations than before because of the difficult of doing so. Essentially students were trading away reading strategies that had been helpful to their learning in order to take advantage of the convenient portability of the e-Reader.

This points to a flaw in the notion of technology non-use that is endemic to human-centered computing—which is to say technocentrism. While those of us in human-centered computing would like think of ourselves as problem solvers, the nature of field inclines us to think about whether technology is used or not, but in the above case, the technology is used, but it prompts the non-use of effective reading practices.

Given e-Reader development, with the Kindle DX then being state of the art, it seemed that technology non-use was in fact the most effective outcome for the problem of graduate student academic e-reading. Also of note were the interesting combination of the e-Reader technology with paper technologies with students finding ways to use the e-Reader in tandem with paper notebooks and print copies of the same textbooks they had on their Kindle.

The fact that the introduction of new technologies can create more problems than they solve is certainly not new, but exploration of how and why non-use occurs or and how “different use” plays out can be useful for understanding limitations of design and future opportunities for design that may or may not have lend themselves to various kinds and levels of technological intervention.

## **Study 2: Meditation, Values and Technology Use**

In modern society, we are constantly being asked to attend to multiple things at once. We must weigh values and make decisions about where and how to focus our attention minute by minute. We have the ability to track and review literally every step we take. It is popular opinion that technology contributes to our experience of fragmentation and hurriedness in work and everyday life. Recently, for example, researchers have focused their attention on technology's relationship to issues such as always-on connectivity [4], busyness [2], and distress caused by email [3]. Meditation is one tool some people look to for help focusing and centering.

To learn more about decisions people are making at this intersection, we are conducting qualitative research in the form of ethnography, interviews, and design activities. We have completed a three-month ethnography in an online Buddhist community, have begun a year-long ethnography in an in-person meditation society, and have conducted 17 formal and numerous other informal interviews. We have collected hundreds of artifacts, including member comments on walls, brochures, event descriptions, and more, and have over 100 pages of field notes.

In this work, we have found tensions regarding technology use and non-use around tracking meditation. Participants track their meditation in many ways—including writing private and public practice notes (summaries of individual meditation sittings), using apps that automatically or manually track number of sittings and duration, keeping spreadsheets, and analyzing read-outs from neural feedback devices, which some participants own. A description of an event, “Quantified Selflessness,” held at one field site, captures the tension between behavior tracking and meditation nicely: they “[explored] the relationship between the Quantified Self (QS) movement and the deepening experience of selflessness, or egolessness, that is described on the Buddhist contemplative path.”

While some meditators resolve this tension by no longer tracking their meditation, others resolve it by becoming more mindful of their motivations for their methods and reasons for tracking. Motivated by similar goals, these meditators may choose to use or not use technology, and may make different choices about use at different places on their spiritual paths. The choice whether to use or not use is determined more by the person's mindfulness, and is made at the level of personal motivations, rather than about technology itself.

In another theme, at another field site, the community has recently started offering teachings remotely through the web, using audio and video. Members have described differences in the quality of remote teachings when, in addition to the remote audience, the teacher has students present in the room, versus when the teacher is alone in the room and speaking to an invisible audience, like a radio show host might. Members have described a certain

“energy” they feel when in the physical presence of certain teachers, an energy that is absent when the teacher is broadcasting solo, but has at times been felt, remotely, when the teacher has an audience present as well. Participants indicate this intangible energy exchange aids in transmission of teachings, as well as being pleasant. Based on the absence of this energy, some members have decided not to attend remote teachings, broadcast via video on the web, when there is no audience present for the teacher, but to attend when there is an audience. Again, the choice between use and non-use is not so binary, and not necessarily to do with the technology.

In both of these themes, it is clear that use and non-use are not quite the most fruitful frames to use to understand participants' experiences and tensions at the intersection of meditation practice and technology use. In these themes, participants' choices are influenced by higher-level spiritual goals, and at given times, participants may make decisions to use or not use. While the effects of technology affect their experiences and influence their decisions, participants are not making decisions about use or non-use per se. They may use or not for the same reasons.

## **Study 3: Low-income shoppers at Farmers Markets**

In a qualitative study investigating the considerations and practices of low-income parents when shopping at farmers markets in Seattle, WA [2], we conducted semi-structured interviews with 16 participants near two farmers markets in Seattle. We also observed those same participants shopping at the markets. Participants need to be eligible for using EBT (Electronic Benefits Transfer) for receiving government food assistance.

Although low-income shoppers value farmers markets, they require other food sources because of budget limitations. There are other constraints such as time constraints, and transportation difficulties. It requires extensive planning outside the farmers markets as part of shopping experience. Different participants made purchasing decisions by balancing a number of factors, such as price, and whether it was organic. Some participants were very cost-conscious, and others believed it was more important to shop locally than it was to shop organically. Therefore, there may be opportunities for improving planning and decision-making before shopping.

Our interviews led us to develop an understanding of how shopping for fresh and local food is embedded in a larger set of values and practices. Shoppers visiting the farmers market are not just there to only purchase produce, they viewed shopping at the farmers market as a family destination, a place to spend agreeable time with their loved ones, and also use the opportunity to educate their children about health eating habits, produce names. They support and augment their activities and the experience by forming service and personal relationships with the vendors at the

farmers markets. Participants said that they came to farmers markets to connect, if superficially, with vendors and fellow shoppers, such as chatting about their families and learning about vegetables and farms. Participants also reported that they did not want to deal with impersonal machines at the grocery stores. Important values among our participants were engaging in interpersonal interaction, chit-chat, and to bargain and learn about produce and food, spending more time with family, supporting local business, and purchasing fresh, tasty food.

We were looking for opportunities for technology intervention, but most of the time we found the shopping experience is complete and satisfied without needing technology involvement while they are in the market. The opportunity for technological assistance is most substantial before or after participants shop at the market and most needed are somewhat mundane information needs such as knowing what will be for sale or which vendors will be selling or what is in season. Certainly opportunities exist for cultivating a greater sense of community beyond the particular locale and the few hours a week when each farmers market takes place.

The most useful technological intervention we can discern and most potent technology use would be web services and community bulletin boards accessible from a library computer—"old" technologies. The question about how and how should technologies be used or not used cannot be answered without defining the limits of what it means to support this group: are we looking at use during the hours of the farmers market or are we looking at the larger context of the role that the farmers markets plays in our participants' lives? Similarly how broad a class of technologies do we want to consider as technology?

## **CONCLUSION**

Technology non-use can be a fruitful line of inquiry for understanding when particular sorts of technologies may or

may not be appropriate for particular types of situations. However, we can also push even farther than the technocentric binary of use vs. non-use. As noted above, people may use or not use for the same reason and the adoption of a technology may actually be detrimental to the larger goal whether that is a personal shopping experience at a farmers market or engaging in deep learning while reading a text. Perhaps our field can be bolder about adopting a problem focus whereby we can feel more comfortable framing problems not just in terms of technology use, or even technology use vs non-use, but looking at technology as just one element—albeit a powerful one—to be addressed in the design move to solve problems that are so often systemic and sociotechnical in nature.

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