Action! Co-Designing Interactive Technology with Immigrant Teens

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ABSTRACT

In the minds and hands of young people lie the capacity to change the world. Our work, InfoMe, is about understanding (a) how immigrant and refugee youth help others in everyday life—elders, friends, complete strangers—through information and technology, and (b) how these behaviors can be supported through youths' designs for interactive technologies and services. We reflect on our work developing the Teen Design Day methodology with youth from Africa and Asia, and consider our approach in relation to others for supporting interaction design with youth. Teen Design Days is a scalable, portable methodology used in situ that enables investigators to explore concepts, test ideas, and create designs with youth, while meeting their developmental needs in safe settings and in culturally and gender appropriate ways.

Categories and Subject Descriptors

C.4. [**Computer Systems Organization**]: Performance of Systems – *design studies*. [H.1.2 [**Information Systems**]: User/Machine Systems – *human factors.* K.4.0 [**Computers and Society**]: General.

General Terms

Design, Human Factors, Theory.

Keywords

Burma; Design Thinking; East Africa; Immigrants; InfoMe; Information Behavior; Information Mediaries; Social Networks; Somalia; Teen Design Days; Teenagers; Viet Nam; Youth.

1. INTRODUCTION

"Another time, I helped a girl who had a big problem because she offered someone to use her phone and that person ran away with her phone. Even though I never knew this girl, I was very humble to assist her by using my phone to call the cops and being a witness for her. I learned by helping this person, one day someone would be there to help me." Pure Honey, 17, Female, Ethiopia

"I usually go to my dad's appointments because I have to help him about what the doctor says and explain information the doctor gives." Amai, 16, Female, Kenya

Why do teens help other people—even complete strangers—with everyday life situations using information and technology? How can these behaviors be supported through designing interactive technologies? How can more researchers be engaged with teens?

Digital Youth are defined as people who have grown up without having to adapt to digital technologies because they have always been a ubiquitous part of their lives. Logically, the younger the child, the more immersed s/he is in a digitally pervasive culture, and excellent design work has been accomplished with children not yet in their teens [11, 13, 19]. But older youth are also rapidly adopting digital media and devices at a significant rate.

The need for research on interactive technology design with teenagers is clear [10, 22]. And it is important for interactive technology designers to understand the unique qualities of teens: their cognitive and emotional state; their developmental stage at the intersection of childhood and adulthood; their lifeworlds and culture; their terminology; their experience with technology; and their physical and social environments. The basic lack of methodological expertise is commonly acknowledged, as few design projects, and few studies of the design process, focus on teens. While our understanding of specific methodological aspects of interactive technology design with teens is limited, with many gaps and uncertainties; conversely, creative and thoughtful techniques are being explored [e.g., 15].

Several researchers in the IDC community recently shared papers on specific issues in collaborative teen design: motivating teen participation in design [17]; and selecting an appropriate site for youth design work and establishing the values and ethics of design work with teens [14]. Of particular relevance to our work with immigrant teens and their role as information and technology help-givers in everyday life is work that explores designing for families and communities in the diaspora [3, 24], for the interactions between community-based social agencies and their immigrant clients [5], and for the design of technology to support healthy behavior in vulnerable families [18, 21, 23]. But the basic question remains: *how may designers best collaborate with teens?*

Our IDC Note shares our experiences with teens and design. As social scientists of the human-information experience, our InfoMe ("information mediary") research focuses on understanding the nature of how and why youth—ethnic minority and refugee youth

in particular—use information and technology to provide others with vitally needed everyday life assistance. This question is based on a progressive body of work [9, 20] and most recently, a study for the Institute of Museum and Library Services and the Bill & Melinda Gates Foundation of 50,000 public library computer users in the U.S. That study showed that two-thirds of users were searching online and carrying out tasks on behalf of someone else [1]. Regression analysis identified these InfoMes as young (ages 14-18), non-white, and non-native English speakers. Thus, it appears that ethnic minority youth are key for surfacing the needs of their respective populations and passing on needed information to otherwise hidden users (especially non-English speaking, non-users of libraries). Understanding the information behavior of InfoMes, thus, is crucial for identifying the greater range of how digital devices, web applications, and information services can help in immigrant communities. These findings also support work on the challenging lives of immigrant youth [4, 16].

2. InfoMe

The InfoMe programme is guided by the following questions:

- How do youth surface the needs of others, provide information and technical help, and create, remix, manage, curate, and search for information?

- How do elders and others engage with youth and benefit from provided assistance?

- How can these behaviors be uncovered and integrated with design thinking [2], in order to translate teen InfoMe experiences into ideas for interactive technology design?

Funded by the Institute of Museum and Library Services and Microsoft Inc., InfoMe's mixed methodology includes: (1) Teen Design Days (TDD)—an award-winning method used with immigrant youth in Seattle, Washington (USA); (2) a paper-based survey (n=575) in six Seattle high schools; and (3) TDD Train-the-Trainer Workshops with designers, researchers, and youth professionals geared to adapting the TDD methodology for use with youth in different places and contexts.

TDD methodology and findings are shared in other reports and video [7, 8]. In essence, it is a high-energy, scalable, portable method for engaging and studying youth that is conducted in varied field settings across two or more days in workshop format.

Basic TDD components include regular "light and lively" activities (short games of physical activity that are tied to the TDD theme and encourage creative thinking), instruction, discussion, group design work and hands-on creation of artifacts, youth presentations, and celebrations joined by family, community representatives, funders, TDD staff, and others. In our remaining space, we present how our TDD method approaches some of the issues noted in the teen design community, such as setting, recruitment, teen motivation, structures for collaborative design, and the role of adults vs. teens. We share our reflections for moving forward, based on our experiences as well as our peer debriefings with researchers at other labs, conferences, and workshops in cognate fields.

3. FEATURES OF TEEN DESIGN DAYS
3.1 Basic Structure
The core of TDD is meeting the key developmental needs of teens—physical activity, competence and achievement, self-definition, creative expression, positive social interaction, structure, and clear limits [6]. TDD attend to both cultural and

gender differences and emphasize having fun. TDD stand out for working with a relatively large number of youth (n=12-24) over a series of days in a non-lab community setting. Our typical researcher to teen ration is 1 facilitator to 5 youth. We thread design periods through each day.

Youth are recruited with the assistance of a community liaison who shares information about the community's experiences leading to their settling in Seattle; identifies potential teen participants; sets up a venue for our team to both recruit youth and conduct TDD workshops; and helps translate and explain human subject protection forms as well as TDD goals and procedures to families. Because youth are paid cash, TDD are oversubscribed.

Another TDD hallmark is that they are held in safe, informal community settings (to reduce association with school formalities), close to where the youth live, during large blocks of time when the youth are not in school. Flexible space is important: TDD require moveable tables and chairs, as well as space for sharing meals and incorporating physical activity. We bring everything—all the supplies, including design kits, paperwork, and snacks. Meals are typically delivered from local caterers owned or frequented by youths' families.

Video-recording, audio and stills are taken of most every TDD activity. Consent and assent forms include these permissions and youth show few signs of observer effect about being recorded. Indeed, teens view access to their TDD photos as an incentive. Because of the TDD design elements and complex inclusion of youth, industry, academic, government and non-government organization partners, our materials are being expanded to include a Creative Commons license governing intellectual property rights.

3.2 Participating Youth
Our ideal number of youth participating is 16-18; divided into 4-5 working groups with at least one adult facilitator. One TDD staff serves as a "runner," attending to ad hoc matters. We've been asked to host as many as 60-100 teens, but haven't the requisite staff/facilities nor are convinced those sizes are feasible.

TDDs typically engage youth from mixed cultures, aged 14-19. While youth are sometimes from one country, such as Burma, or one region such as Eastern Africa, it'd be a gross generalization to assume that youth have shared experiences. Within Eastern Africa, for example, youth may speak any of several languages and have very different immigration or refugee experiences coming to the U.S. Thus, unlike many youth co-design projects, TDD youth are diverse in language ability; age; socio-economic span; and their personal histories and experience with technology.

3.3 Focus on Teens' Help-Giving Behavior
Once youth arrive and settle in at TDD with ice-breakers, they develop together a set of expectations, e.g., "respect others" and "everyone participates." The TDD method for understanding InfoMe behavior begins with establishing concepts and eliciting drawings and stories, in order to uncover the youths' use of terminology and their lived experiences. Teen stories also provide early creative content for dramatic play, appropriate cultural probes, and later design. Thus far we've used similar instructions at TDDs: draw a diagram or write a story of how you help people with information and technology. One lesson we learned is that nuances in the preceding conceptual discussion affect the teens' stories and diagrams and subsequent TDD work. Another is that asking for *both* a drawing and a picture might generate more productive and clearer output from teens.

Specifically, TDD1 (March 2013), with 11 youth from East Africa and Viet Nam, ages 14-19 (6 boys, 5 girls) was influenced by (1) language from the facilitators of technology playing a de facto role in InfoMe behavior; and (2) difficulty explaining the concept social network versus social media. Youth returned with diagrams that reflected their digital social media—e.g., Twitter and Instagram—worlds. At TDD2 (June 2013) with 23 youth (ages 15-18; 9 boys, 15 girls) from East Africa and Nepal, we refrained from privileging "technology" in the opening discussion and used "social circles" in the diagram instruction. Next morning, youth returned with a broader range of less-technology focused diagrams and stories, more youth had elected to write stories, and a few youth chose do both—story+diagram illustration.

The resulting data provided insights into the participants' lives. An example is provided at this paper's outset—the stolen cell phone and how the teen offered hers to the victim to contact help, albeit aware of the risk of her own phone being stolen. In sharing stories, youth reflect on their experiences with information and technology and become primed for engaging with design. Youth also share how they curate information, such as writing ideas and notes on paper, devices, and skin (hands, forearms).

3.4 Interactive Design with Youth

TDD differs from much a lot of co-design work in that it is as much about teen development and community capacity-building as it is about design; thus, our methodology has roots in community-based participatory research [12]. We provide opportunities for individual expression, growth and learning. At the same time, TDD produces design insights that recognize a *community-wide system* of *general everyday help-giving and help-getting*, rather than focusing on a single device, organization, application, or website. We've learned to base our hands-on, low-tech prototyping around a focal point proposed by TDD adults, yet left open enough for teen appropriation and expression. "Staying on the sidelines" is one way to depict the role we have as adult facilitators in TDD design sessions.

TDD2 included two design tasks. The first was to create "your ideal cell phone," since mobiles were more common and desirable than laptops or tablets among our teens. They focused and were inspired by their current mobile use and desires for new features. Because of teens' heavy use of mobiles, we included an introduction to TouchDevelop, a programming tool for smart phones. The second design task was to "create any tool or service that would aid you in your role as an InfoMe." With about 2 hours in which to work, teen groups of 4-5 with one adult facilitator were given a table-sized piece of paper and markers, as well as a design kit with craft supplies (each kit costs ~$50). First came group brainstorming, with each member jotting and sketching ideas on the paper, which everyone saw as they talked. Next, each group came up with a single idea for further development, often merging ideas from individual group members. Then they moved from 2D to 3D work, using craft supplies—e.g., paper, popsicle sticks, pipe cleaners, stickers, wiki sticks, clay, cardboard, and felt. In the second hour, the groups presented their 3D designs. A facilitator, using large paper taped to the walls, collected feedback from everyone on each design. Teens used sticky notes to record their "likes, dislikes, and suggestions for improvement."

InfoMe tool prototypes included a wristwatch cell phone, a multimedia information kiosk at bus stops, and a free van for the elderly equipped with "comfy seats" and information monitors that would take the seniors from their homes to various information and educational hubs (including museums and classes) in the city and home again.

Similar to other design projects reported in the literature and noted above, we have found teens to be competent partners in design. They also helped refine TDD processes. At the end of each day, we reflect with participants about (1) what went well, (2) what could have gone better (didn't go so well), and (3) what could be changed for next time/day. On the final day, the teens receive an evaluation sheet that asks them to reflect on the experience as a whole and provide feedback that can be used to determine if session goals were met and suggest improvements for future TDD iterations. Thus, we learned during TDD1 that we needed to spend more time with the youth exploring the concepts they would be designing around. In TDD2, we discovered that the light and lively activities rejuvenated teens and helped them stay on task, and could be further linked to InfoMe behavior. In TDD3, in April 2014, we will ask teens to combine stories and pictures to depict their information worlds. We also hope to improve our work by offering less talk and more active exploration and play.

4. CONCLUSIONS

InfoMe is an example of how research programmes are about sometimes digging deep, at other times casting broadly. Both are needed to understand a big picture and make a difference over a lifetime of effort that involves a multi-disciplinary cast to inform and enrich the journey en route.

To summarize key lessons that might help others, we recommend:

- Provide cash, fun, convenience, and autonomy to motivate teens;

- Follow precepts for addressing teen developmental needs;

- Use teens' stories, skits, and drawings to stimulate and complement design work;

- Choose settings that get teens away from formal school influences; and

- Expect the unexpected, be flexible, and embrace messiness.

We've also learned the importance of crafting strong partnerships with varied stakeholders. These include: (1) community-based organization staff, who suggest and describe youth populations for study, facilitate youth recruitment and access to facilities, guide engagement with parents, and hope to learn from TDD; (2) industry and universities that sponsor our work and provide consultants and resources for TDD design and programming activities (as well as video-recording); and government funding agencies looking for rigorous and useful research results to guide their policy making and increase their impact.

A TDD hallmark is the hope for creating short-term, mid-term and hopefully, long-term impacts on youth, to build teens' capacity and contribute to their families and community. In this regard, our work fits into the larger frame of the intersection between design and constructive social change, along the lines of IDEO.org and AIGA's Design for Good platform (http://www.aiga.org/design-for-good/). We've learned that small mindful ways to "do good" include over-catering so the youth can bring extra food home. In our workshops, youth are coached to really see and appreciate how they help others in their community. Larger commitments include supporting teens' participation in national conferences to

build their communication skills, give them a sense of accomplishment and self-confidence, and provide them with the chance to travel and experience professional work activities.

While still learning about teens and design, we believe that world-wide, youth are one of society's biggest assets. As educators and designers, we've found that a great deal can be accomplished when a youth-focused, action-oriented, and fun process is employed. Once the basic elements of communal respect and openness are established, much can be created, developed and shared to promote broader individual, familial, community, and societal benefits. As TDD youth shout in unison at the start of each new session: 1-2-3 Action!

5. ACKNOWLEDGEMENTS

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