Lessons learned from an initial effort to bring a Quantified Self "meetup" experience to a new demographic

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Abstract
Quantified Self "meetup" groups appear to be appeal largely to middle-aged white males. What happens when the target demographic is changed to high school-aged Latina girls? This paper summarizes two lessons learned from an initial effort to enact a version of a Quantified Self meetup with youth from this population. Specifically, the appearances of the devices and limited access to resources outside of the meetup sessions were major concerns.

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Quantified Self; Education; High School

ACM Classification Keywords
K.3.1 Computer Uses in Education --- Collaborative learning

Introduction
The recent growth of the Quantified Self (QS) movement and the associated tools and practices associated personal informatics has generated attention in a number of circles, including within the world education. Some early efforts to use youth behavior and activity data are now being explored, and initial studies demonstrate what youth can learn by way of

examining data obtained automatically from their own activities [5,6,7].

Yet much remains to be understood regarding how QS and youth can productively come together. Recent analyses of QS communities, using public video data obtained from show-and-tell talks at regional "meetup" group meetings and the QS international conference have shown that health and personal wellness tend to be a major focus for Quantified Selfers (QSers) [2] and that the demographic of QSers appears to be most typically represented by white males in their 20s – 40s [4]. The exact reasons for this subset of the population to be the most heavily represented demographic in the online spaces of QS are unknown, but may be associated with geography (e.g., metropolitan urban areas), higher levels of education (e.g., college education, potentially in a STEM field), and other factors (e.g., income). But is QS representative of a community and set of practices that could, in principle, be accessible and useful to all? That is the overarching question that led to the present investigation.

The present investigation

Rather than focus on white males from large urban areas, we recruited high school aged Latina girls from a small town and surrounding rural areas. For five weeks, these girls were involved in a first iteration educational design experiment [3].

In very crude terms, a design experiment is a research approach in learning sciences and educational technology associated with a methodological paradigm known as design-based research. While there are a number of epistemological positions and warrants associated with the still emerging paradigm, the core idea of design-based research in education is that by designing and implementing new tools and experiences within real learning environments, we can glean important insights into the complexities associated with situated learning, learning environment design, and the complex social ecologies that affect the ultimate impact of a designed intervention. This is intended to extend our knowing of what works, or could work, in the larger world of education outside of the tidiness of a research lab and within the parameters of a tightly controlled experiment.

We approached this design experiment with an empirically-based awareness of some of the practices associated with QS meetups [4] and some of our own prior research related to high school students analyzing personally-familiar data [6]. We also planned the design experiment such that students would be provided with their choice of self-tracking device, models of QS self-experiments they could emulate, access to data visualization software that was explicitly designed for youth, and one-on-one tutorial sessions with a member of our research team. In total we had 5 afterschool workshop sessions that lasted between 45 minutes and 1.5 hours (depending on whether the girls needed to leave early due to schedule conflicts). All sessions were videotaped with at least one standing high definition camera. For the purposes of this paper, we do not present a systematic analysis of the video footage. Rather, we focus on two of the lessons learned as a result of launching this initial design experiment.

Two Lessons learned

Lesson 1: Appearances matter

On the first workshop day, the students reviewed some sample self-experiments posted on the quantified self

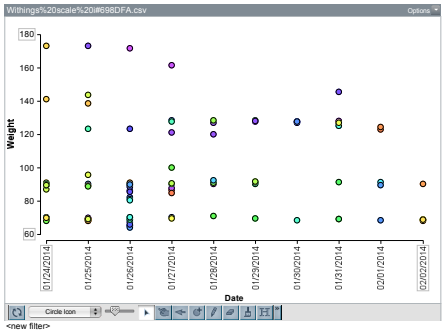

Figure 1. Data obtained from a Withings wifi scale in a household that had never owned a scale before

website (quantifiedself.com) and one completed by the second author before they were introduced to a variety of technologies that we had provided. One of our initial concerns was that the limited familiarity and availability of a personal informatics device may be the most immediate obstacle for participation in a self-quantification exercise, so our goal was to provide these tools for students to take home and then seek to understand what else supported or inhibited their use.

We had obtained 7 types of devices for the students to use. These included: The Fitbit One, Fitbit Flex, a Syncburn Fitness Tracker, a Garmin Forerunner Watch, Bodymedia Fit, Withings WiFi scale, and a Jawbone Up. While functionality was demonstrated for each, it turned out only 3 devices generated much interest from them and were immediately claimed: the Jawbone Up activity tracker, the Fitbit One activity trackers, and the Withings wireless scale. Regardless of their capabilities, the student did not want to use the watch-based units. When we inquired why not, the common objections being that they were bulky, ugly, or were otherwise unfashionable for regular use. The Jawbone Up was considered to be much more attractive than the Fitbit Flex, and was thus the only wrist unit selected. There were concerns about using the devices during the weeks of the workshop, with concerns about the devices being too noticeable being often mentioned. One student was reluctant to wear a device on the night of a high school dance because it did not match the rest of her outfit, but reported that she did ultimately wear it because she was involved in our study. From these comments and experiences, it appeared that while the devices may look sleek and futuristic, relative to previous generations of devices, the form factor was a serious concern. While it appears that some wearable technology may be desirable because they can be noticed and recognized by others, this group of students strongly preferred devices that would not be noticed.

Lesson 2: Access to material resources is uneven

A second lesson we came to appreciate was that access to necessary support technologies varied, but the devices tend to make an implicit assumption that users will have access to the latest and greatest devices. One student, who was very interested in the wifi scale did not actually have reliable wifi at home. She ended up passing the scale on to another student in the workshop who did have wifi and was interested in looking at weight over time. What ended up happening was that the scale became, initially unbeknownst to her, a novelty in the home. Her family had never owned a scale before, and having one provided, even temporarily, through a university project, was very appealing. It turned out that everyone in the family used the scale, and some family members even brought over friends and neighbors over to try out the scale. This was determined from a large number of measurements made across a broad range of weights.

As the workshop proceeded, we learned that one student's particular family was like many others in the community in that they had modest financial resources. We became aware of this when we learned that between the participating student and her identical twin sister (not a workshop participant), the family could only afford to allow one to participate in the afterschool athletics program due to cost. We also learned that both the participating student and her sister also needed to work part time job at a fast food establishment to pay for their own required school fees.

As such, their daily activities were strictly scheduled and controlled, so there was little room for her to experiment with changes in her routines. In fact, there was some tension during one workshop day when one student was discussing unexpected variability and fewer hours of rest in records of her sleep despite a consistent bedtime. Another student, in a critical tone, commented that because she needed to work a side job to help provide income for the family and then had to stay up as late as necessary to get her schoolwork done after, she did not have the luxury of a consistent bedtime.

Limited access to resources outside of a researcher supported workshop has been noted as a challenge in other projects that try to combine QS and education [1]. Indeed, one of the recurring challenges of designing for educational settings is being considerate of and responsive to the different levels of access that youth have to technology resources. While there is much talk about the current generation being digital natives and living off of mobile devices, this does not mean that their homes have access to high speed internet or that they have the discretionary time and space to experiment with their daily routines. We do not feel that this invalidates the practices of QS as being useful or feasible with youth generally, and even non-majority youth specifically. However, it does raise the concern that there are implicit assumptions made – by device makers and experience designers - that should be surfaced and examined carefully if QS is to be productive in educational settings and with as yet unreached populations.

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