

Crafting Identities: E-textile Artifacts as Mediators in High Tech Communities

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Abstract: Much research has demonstrated the use of digital media as a means of creative expression, yet skilled technical practices still remain inaccessible to many youth. One challenge to broadening participation in this field is making high tech design more accessible. In this poster we suggest that creating e-textile artifacts, objects that sit in tension between engineering and sewing crafts, is one way for youth to craft identities that are meaningful personally and to local social groups and broader technical communities. Drawing from analysis of e-textile artifacts and presentations by two groups of youth from different workshops, we argue that the personal design and genre-crossing nature of such artifacts are key in their ability to mediate between personal legitimacy and broader identification with high tech communities.

Introduction

Much research has focused on the importance of digital media in providing means for social and creative expression in youths' daily lives (Ito et al., 2008). Yet the practices of "geeking out," those practices that involve the most fluency in technical design, have been less accessible, in particular because high tech communities have been described as a 'locked clubhouse' (Margolis & Fisher, 2002). Helping youth identify as part of these communities – through both their sense of self and their ability to participate in practices relevant to high tech communities – is a challenge to broadening participation. Drawing on researchers who have pointed out the power of creating appropriate artifacts that can mediate belonging in a community (e.g., Barton, Tan & Rivet, 2008), in this poster we suggest that e-textiles, which merge the design and programming of electronic circuits with crafts (e.g. sewing), can promote youths' identification with high tech communities while also allowing them to express personal interests and build relevance with local social groups like friends and classes.

Artifacts are symbolic objects that convey meaning and mediate activity (e.g., Cole, 1996). People create and use these symbolic objects to manage their thinking, mediate social interactions, and identify themselves. Barton et al (2008) point to artifact creation as one of the successful mechanisms that allowed urban girls to bring aspects of themselves from other social settings into a science classroom and identify both with popular fads that created relevance with friends and also as interested in and good at science. Here we go a step further to suggest that the e-textiles youth created in two workshops we led allowed them not only to build relevance with their local peers but also express personal interests and connect themselves to the technological community writ large. The e-textiles provided them with the opportunity to express themselves and to learn skills which placed them as part of a community of people who use circuitry.

Methods and Findings

In 2010 we ran two extended e-textile workshops, a four-week after-school club for 8 middle school youth and a two-week long summer day-camp for 12 high school youth. The findings are based on interviews, presentations, and documentation of the youths' designed e-textiles, supplemented with participant observation and video recordings of the processes of creation of these artifacts. Based on grounded theory (Charmaz, 2000), we performed a two-step, open-coding of youths' descriptions and demonstrations of their projects in social context, including which comments brought responses from audience members (peers and teachers). The analysis revealed themes of artifacts as a nexus of personal creativity and interests, artifacts as a means for local relevance with peers, and artifacts as a mediator for academic relevance and membership in broader imagined tech communities. Though space is limited here, we describe how some projects relate to the larger findings.

Below are four examples of projects youth made (see Figure 1): a shoe with an RGB light, a bag for "Mom" with a cat whose left eye lit up, a backpack with turn signal arrows connected to a switch on a shoulder strap, and a "pocket ninja" that lit up when pressed (see Figure 1). The most obvious theme, personal creativity & interests, is evident in that these youth were all offered the same materials—LEDs, coin cell batteries, switches, and conductive thread—but creatively designed their projects for different purposes (e.g. functional turn signals, gift) and to show different interests or personal qualities (interest in anime, uniqueness in using keychain to conduct electricity to other colors on the shoe). The next theme, local relevance with peers, is demonstrated in the youths' presentations through their uses of humor and references to shared trials. For instance, the creator of the pocket ninja elicited chuckles from her peers when she described how much work her project took, "So I was up until like 2 o'clock in the morning to finish the ninja? And 3 o'clock trying to get this light on." Other presenters drew similar chuckles, sighs, nods, and groans when they presented their creations,

building shared relevance with their peers in the workshops. The final theme of relevance and membership in broader tech communities appeared in some of the larger discourses exhibited in the talk surrounding the projects. Many of the students, without being asked, demonstrated how their circuits worked, gesturing to the orientation of positive and negative ports or parallel circuits. Others commented on the high goals they had set for their projects even though they had not attained them (yet).



Figure 1: Pictures of E-textiles Artifacts: Shoe, Mommy Cat Bag, Turn Signal Jacket, Pocket Ninja.

Discussion

We found that the explanations and projections tapped into a larger discourse relevant to either the local academic setting (e.g., school) or an imagined community of tech people who were ‘better’ and more proficient at the activities. In the context of the middle school group the conversations were about explaining the functioning of the circuits whereas in the context of the high school group, which took place at a School of Science and Engineering at a prominent university, they referenced the engineering community. One explanation for this difference in imagined audiences is the presence of undergraduates and professors of Computer Science at the high school camp, where the emphasis was on training them to be future participants in Computer Science in college. Regardless, both groups of students, without direct coaching, worked to be relevant to an academic audience and related technology community. We argue that one reason is because of the genre of the artifacts. E-textiles tap into fields of engineering/computer science as well as arts/crafts. Both the engineering and artistic components are highly gendered and this puts the students in a unique place that provides multi-dimensional space in which the design of these artifacts plays out. We found that the self-designed artifacts in this context can have multiple purposes and can be utilized in ways that reveal inventiveness with connectors and materials as well as personalization. In addition, they have the potential to be boundary-crossing objects that cross social settings of home, peers, school, and larger communities (technological/professional, affinity groups). As such the e-textiles reflect youths’ efforts in ‘crafting’ their identities not only in the most literal sense but also by signifying relevance to themselves, to local community, and to imagined broader communities (see also Enyedy, Danish & Fields, in press). Future work will examine how the contributions of e-textile artifacts to an online community called the Lilypond, containing hundreds of different e-textile artifacts, helps situate young designers’ sense of belonging to a burgeoning e-textile community.

References

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