A Theory of Technical Capital

Sarita Yardi
School of Interactive Computing
Georgia Institute of Technology

The amount of time teens spend on social networking sites is astonishing. Teens love hanging out on the Internet but they often do not connect these activities to the kinds of skills they can develop and the kinds of things they can do online. Teens are capable of doing more than they do, but they don’t. Why? I argue that their technical attitudes and competency are fundamentally social and are strongly influenced by people around them. My research examines how teens’ technical capital—their access to technical expertise within their social networks—develops as a function of their relationship with parents, siblings, friends, and local community members.

WHY TECHNICAL CAPITAL?
Technical capital is vital to a national initiative on social participation [9]. An educated and Internet-literate workforce is essential for economic growth and progress, yet there are few models to explain how technical capital is formed. Most Web users are consumers; a small number become contributors, and an even smaller number become leaders [7]. A theory of social participation should positively impact people’s access to information, resources, and upward mobility and should empower individuals to critically navigate through their social spaces online. Broadening participation in the social web is also important for diversity and equality, especially with growing groups of home Internet users like baby boomers, seniors, minorities, and rural users [3,4].

A THEORY OF TECHNICAL CAPITAL
I define technical capital as the availability of technical resources in a network, and the mobilization of these resources in ways that can positively impact access to information and upward mobility. This definition is drawn from a theory of social capital which is a measure of access an individual may have to resources embedded in relationships with network members [1,2,6]. My definition of technical capital builds on Pierre Bourdieu’s notion of technical capital as a subset of cultural capital, based on any broad skill or educational level reached [1], but focuses specifically on capital related to technology attitudes and use. It also differs subtly from Paul Resnick’s “SocioTechnical capital” which refers to a framework for evaluating technology-mediated social relations [8]. I am interested in understanding what people think about technology and why.

The process of measuring technical capital draws on an approach from the social sciences called ego-network analysis. Ego refers to the person being studied, alter refers to the people she knows, and tie refers to the relationship between them. I am developing a technical capital instrument based on existing instruments for measuring social capital (see [10]). Questions in a technical capital instrument include:
1. If you have a problem with computers or technology, who do you go to for help?
2. How is it the other way around? Are there also people who come to you for advice regarding problems they have with computers or technology?

Participants are asked to list names of people they know for each question and then to articulate their relationship to each person and how close they are to the person. From this set of data points, a network of ego’s technical ties can be drawn. Ties act as information transmission lines in a social network; access to novel and diverse information varies with the level of homophily—the tendency to associate with people who are similar—in the network. For many issues, access to just one strong tie may be sufficient, independent of additive effects through access to multiple ties containing overlapping information.

This distinction is theoretically grounded but has strong practical applications: when measuring technical capital is there a difference in effect between having one tech-savvy parent or two? Does it matter if the parents offer a diverse range of skill sets? And how do other relations like siblings, aunts and uncles, or friends’ parents factor into the equation? Volume, heterogeneity, and upward reach among network ties—especially local family ties—are important indexes into technical capital in a teen’s social network [6].

**PRACTICAL APPLICATIONS**

My dissertation work involves developing a measure to understand how technical capital is formed, and building a set of interventions that look to support teens in developing technical competency. Through a series of ethnographic and design-based studies [11-13], my work has moved towards an interventionist approach that has been underexplored: what happens when teens design their own social networks online? What happens when they are given the opportunity to create, design, administer, and govern their own communities on the web for an audience of parents, siblings, and friends?

I am running studies with three populations in the Atlanta area where teens design social networks for their local communities. In each, I am measuring technical capital among those who join the sites. Evaluation of how technical capital is formed and how it can be influenced will involve complementary quantitative and qualitative approaches, including measurement of network traffic, analysis of ego network survey data, and interviews and focus groups with teen and parent participants.

- Parents as Partners 2016 is a social network for parents at a local Atlanta school that has been built and maintained by high school students at the school. The site was designed to inform and engage parents about the kinds of things their children are doing with technology by having them actually participate in their own online social networked community centered around their 6th grade children. Participants are learning skills like measuring traffic to the site using Google Analytics, generating targeted content, establishing policies, and supporting novices and newcomers.
AGS Beat is a social network created by girls at a local girls’ school where students submit entries every two weeks and winners are chosen and posted to the site. Entries vary from poems to hip-hop music and site members have broadened beyond students to include teachers and staff. Participants are learning about ownership and responsibility, managing multiple profiles online, creativity, and community-building.

Fugees Net is a social network for teen refugee boys to write about their experiences playing soccer. The boys are primarily from western African and Middle Eastern countries and soccer has become central to their lives in Atlanta. The goal in this site is for refugee boys to learn basic literacy and computation skills in the context of an activity that they love and do together every day.

**FUTURE DIRECTIONS AND OPEN QUESTIONS**

I anticipate that teens’ technical capital will correlate strongly to parents’ attitudes and aptitude. Much time has been spent discussing sites where teens and parents do not or cannot coexist, but little time has been spent investigating sites where they can. Offline, teens are physically grounded and geographically constrained by their home and family, but they have no such fixed space online—there are few contexts where parents and teens are encouraged, or even allowed, to hang out together online.

While teen relations online are central to my dissertation work, I am motivated by a broader agenda of how to help people access resources and information online. Online participation can be deeply divided by social barriers of race and class [3,5]. Attitudes towards technology are a function of cultural and societal norms and values but can also be heavily influenced by strong ties with family and friends. A theory of technical capital can help us understand how technical competencies are formed, and design-based interventions can promote positive educational outcomes and opportunities for economic advancement.

**REFERENCES**


