

What Do Teens Ask Their Online Social Networks? Social Search Practices among High School Students

Andrea Forte, Michael Dickard, Rachel Magee, Denise E. Agosto

College of Computing and Informatics

Drexel University, Philadelphia, PA, USA

aforte@drexel.edu, m.dickard@drexel.edu, rachelmagee@drexel.edu, dea22@drexel.edu

ABSTRACT

The majority of American teens use social network sites (SNSs) but little is known about how they leverage their online social networks to find information. As part of a larger study on social media and information behaviors, we surveyed 158 high school students to learn about their online question asking and answering practices. We describe which teens are most likely to ask and answer questions, what they ask about, on which sites they ask questions, and how useful they perceive SNSs to be as information sources. When possible, we draw comparisons with findings in the literature about adult populations. We contextualize these findings using early insights from interviews and focus groups with 80 teens and discuss how perceptions of audience, privacy concerns, and self-presentation all play a role in teens' use of SNSs to ask and answer questions.

Author Keywords

Social Search; Q&A; Social Media; Youth; Teens; Information Seeking

ACM Classification Keywords

H.3.3 Information Search and Retrieval: Search process

INTRODUCTION

Teenagers are notoriously active users of social media: in 2012, 95% of American teens were online and 81% of them used social network sites (SNSs) [25]. Ito et al. [21] demonstrated that young people use social media not only for identity exploration and socialization (friendship-driven activities), but also to engage in learning and exploration about the world around them (interest-driven activities). Simultaneously, research on question asking has begun to explore how people make use of their online social networks to find information, who is likely to engage in such practices, how question asking fits into their lives and what the benefits are. Yet we are aware of little work to

date that has examined these questions in the context of teen life. In an ongoing study of American high school students, we are exploring how the increasing reach of online social networks and other social media into their daily lives plays a role in teens' online social information seeking practices.

Recent work by Lampe et al. [22] found that the likelihood of adults using Facebook to ask questions was negatively correlated with age—in other words, younger adult participants were more likely to use Facebook to ask questions than older adult participants. Yang et al. [37] found this same trend among adults from four different cultures (India, China, the United Kingdom, and the United States) who use a variety of SNS platforms to ask questions. These studies point to teenagers as a group likely to ask questions using social media, yet researchers don't know much about what teenagers' online Q&A behaviors are like. We have begun to address this gap through a survey of 158 teens in two different regions of the United States. In our discussion of findings, we examine the ways that teenage life provides a unique context for question asking and answering online by drawing comparisons to literature on adult practices.

RELATED LITERATURE

The Work of Asking and Answering Questions Online

The ways information resources are collectively created and curated online are of interest to CSCW researchers who wish to better understand and support these processes. Because of this, question asking and answering has attracted a great deal of attention from the CSCW community. Once a question has been asked online and answers have been publicly posted, ranked and/or refined by interested parties, these socially constructed artifacts can become a resource for future information seekers. For this reason, research on question asking and answering has often focused on identifying and encouraging high quality questions and answers. Some researchers have developed algorithms to identify questions that are likely to have high informational value [20] and to predict the best answers [2, 19]. Others have examined how people assess answerers' authority and reputation [29], and have investigated linguistic features of posts that elicit responses in online forums [9]. Much of this existing work has investigated behaviors in contexts like Usenet forums and, more recently, services that are dedicated to supporting asking

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

and answering like Yahoo! Answers, the now-defunct Google Answers, and Quora, a Q&A site that integrates features of a SNS.

In the past few years, many researchers have shifted their focus to asking and answering in the context of SNSs that are not dedicated Q & A platforms, such as Facebook and Twitter. boyd [7] has examined SNSs as “networked publics” characterized by persistence, searchability, replicability, and invisible audiences. We view these four characteristics of networked publics as a compelling framework for understanding question asking activity on SNSs. When informal social exchanges are persistent and searchable online, they become information resources long beyond the timeframe of utility for the initial participants. Because they are replicable, such exchanges can also be broadcast and amplified across many social groups. Finally, invisible audiences may contribute to the sense that asking a question is a useful behavior in the first place: “I can’t think of who, but someone must know about this.”

One response to this information-centric view of question asking and answering is to problematize expertise finding. This thread has long been present in research on social search behaviors in the enterprise, where knowing who to ask within an organization can be a barrier to productive interaction and finding help or information [1, 38].

In a study of 624 Microsoft employees that was among the first to explore question asking in the context of SNSs, Morris et al. [28] found that about half of the respondents had asked a question on a SNS and, based on example questions, constructed a taxonomy of question types that people ask their online social networks. They also found that people sometimes preferred asking questions on SNSs rather than social Q&A sites or search engines, particularly when subjective information was requested and when questions required answers tailored to the asker. Teevan et al. [34] investigated the quality of responses to questions posted on SNSs and identified strategies for eliciting better, faster responses; for example, by including a question mark and scoping the question well. Conversely, Lampe et al. found that many Facebook users do not view the site as an appropriate venue for seeking information or asking favors [22]. Ellison et al. [11] examined requests for help (not just information) in 20,000 public Facebook status messages and discovered that help seeking was a relatively infrequent occurrence that appeared in less than 5% of their sample.

It is important to note that question asking and answering does not only serve as a vehicle for finding information or getting help. Participants in Morris et al.’s 2010 study [28] reported secondary benefits of asking questions of their online social networks such as emotional support, creating social awareness, or having fun. Thom et al. examined Q&A within the enterprise context—that is, using special, dedicated SNS platforms that are only accessed by other employees—and discovered that even in this context where work-related topics can be expected to dominate Q&A,

14% of questions were categorized as personal or social [35]. Paul et al. [30] found that rhetorical questions are the most common type of question posted on Twitter. When viewed as an archival resource, the presence of rhetorical questions, conversation starters, and social banter diminishes the utility of social media Q&A as an information resource; however, these studies suggest that the purpose of question asking is not always to meet an information need.

Teens’ Lives as a Context for Social Media Q&A

The studies discussed in the section above draw from data on adults or do not differentiate between adults and minors. Teenage life is different from adult life. Different kinds of social, cultural and biological constraints and needs give rise to different experiences, expectations, and behaviors. Livingstone and Helsper found that young people differ from adults in their reasons for using or not using the Internet [24]; however, explanations for these differences are not yet robust. Developmental psychologists have described identity exploration as a critical feature of the teenage years [12, 36], and social scientists have examined the ways that young peoples’ activities and relationships with technology are influenced, structured by and subject to monitoring and regulation by adults and institutions [5, 7]. The simultaneous experience of growth and vulnerability that characterize “teenagerhood” make youth experiences of mediated social interaction an object of widespread interest.

Some research on how teenagers look for information has focused on specific task contexts that are viewed as socially or developmentally important, such as homework [13, 14] or finding health information [16]. A large and growing body of research has also examined teens’ practices as they encounter information needs in diffuse contexts sometimes referred to in aggregate as “everyday life.” For example, Rieh has studied young people seeking information from their homes [31], and Gasser et. al. note that young people encounter information needs in diverse contexts outside of school that elicit unique search and assessment strategies [15]. Ito et al. [21] also suggest that the kind of activities youth are engaged in at a given time has a profound effect on the ways they communicate online and what they communicate about; friendship-driven participation on sites such as MySpace and Facebook largely involved learning about the opinions and values of peers, whereas interest-driven participation involved the development of specialized forms of expertise within niche knowledge communities. Agosto and Hughes-Hassell [3, 4] developed an empirically grounded taxonomy of youth information needs, including 28 discrete categories, which we use as a starting point for capturing the breadth of questions teens ask and answer in SNSs.

Teens Asking Questions Online

Between the interest in asking questions online, the widespread use of SNSs among teenagers and the interest in how teens find, assess, and use information, there has been

surprisingly little work on SNSs as sites of information seeking among teenagers. Takahashi's ethnographic work on SNS use among Japanese youth found that SNSs served as information sources via browsing or passive reception but did not investigate question asking or answering as a practice [33].

We know little about how and when young people leverage their online social networks to satisfy information needs and in what contexts they are likely to do so. We don't know what kind of work question asking on SNSs might do for teens that goes beyond satisfying specific information needs, such as having fun or obtaining emotional support as observed by Morris et al. [28].

As a first step toward understanding these issues, we ask:

- How prevalent is question asking and answering using SNSs among teens?
- What demographic characteristics are correlated with online asking and answering?
- What kinds of questions do teens ask their online social networks?
- What are teens' perceptions of social media as sources of information?

METHODS

The data we used to answer these questions were collected as a part of a larger study on teens' social media use and information behaviors, including a survey of high school students, focus groups and interviews with a subset of survey participants, and a survey of libraries that provide youth services. In this paper, we focus primarily on data from the survey of high school students, which was designed to help us answer the four questions above. Survey data were collected from December 2012 through May 2013 and 158 students have participated. Once requisite permission had been obtained from parents and the surveys were completed, students became eligible to participate in interviews and focus groups. Surveys were administered online and could be completed by the students any place they could access the Internet. Our interview and focus group data collection effort was completed in June 2013 with 80 participants, 50 in focus groups and 30 in interviews. We offer some preliminary insights from interviews and focus groups where they help contextualize findings from the survey and explain how findings from the survey inform our ongoing study; however, analysis of these data are in progress.

Survey Instrument

In order to collect a dataset that builds on existing knowledge about question asking and answering, we integrated features from other surveys. First, we borrowed techniques from Morris et al.'s study of Microsoft employees [27] to collect a sample of real questions by asking teens to provide us with an example of a question they had recently asked on an SNS, answers they'd received, and an explanation about which answer was the

best one. We also asked them to provide an example of a question they'd answered, the answer they provided, and why they had answered it. Although they were encouraged to copy-and-paste examples and some of them clearly did so, other students paraphrased questions and answers in part because they completed the survey using school computers where sites such as Facebook were blocked; thus, issues with participant recall may have affected the quality of some example questions.

We used Agosto and Hughes-Hassell's [3, 4] 28 categories of teens' information needs to collect data on the topics that respondents have asked questions about, would ask about, or would not ask about. Because they were sometimes based on constructs from the literature (i.e. "self-actualization"), the categories were modified to make them more understandable and distinct from one another. In the end, we retained 26 of the 28 original categories. The survey was piloted with undergraduate students to assess whether it was understandable. In addition, respondents were prompted to provide an example of a question for each category, which helped us assess their interpretations of the categories we asked about and ensure validity of the results.

Finally, we adapted a question about the usefulness of SNSs as information sources from Lampe et al. [22] and measured Web-use skill level using Hargittai and Hsieh's validated 10-item survey instrument [18], which was originally created by comparing people's actual online abilities in searching for information with their responses to survey questions about knowledge of Internet concepts [17]. Respondents were asked "How familiar are you with the following computer and Internet-related items?" with prompts for 10 Internet-related concepts (Advanced Search, Spyware, Wiki, JPG, Weblog, Cache, Malware, Tagging, Phishing, PDF). These items were coded using a 5-point Likert scale to assess the respondents' understanding of each item. The resulting index variable in our study ranges from 10 to 50, which exhibits high internal consistency with a Cronbach's alpha of .88. We will refer to this construct as "Web-use skill" and "skill" to be consistent with the literature [16].

We included two bogus terms in the skills scale (Proxypod and Fitibly) as well as a question to assess whether respondents were attending to the survey or simply checking off answers. Surveys that failed two of these three checks were discarded from the dataset, which comprised 6% of the original data set.

Sites and Participants

Our survey data were collected from two populations of American high school students. One population attends an urban public science and engineering magnet high school that we refer to as SciCentral High. SciCentral is known for its award-winning integration of technology throughout the curriculum and 1:1 laptop program. The school enrolls

	Facebook	Twitter	Google+*	Tumblr	Instagram**	Pinterest	MySpace
Several times a day	44.3%	34.4%	11.5%	20.4%	22.8%	1.3%	0.0%
About once a day	21.5%	7.0%	5.1%	5.1%	3.2%	2.5%	0.0%
3-5 days a week	7.6%	2.5%	7.7%	6.4%	1.3%	0.6%	0.0%
1-2 days a week	6.3%	3.8%	5.1%	3.8%	0.6%	3.2%	0.0%
Every few weeks	5.1%	2.5%	9.0%	5.7%	0.6%	3.8%	1.3%
Less often	6.3%	10.8%	20.5%	14.6%	0.0%	10.1%	18.4%
Total Users	91.1%	61.1%	59.0%	56.1%	28.5%	21.5%	19.6%
Total Non-Users	8.9%	38.9%	41.0%	43.9%	-	78.5%	80.4%

Table 1: Frequency of participants' social media use.

* Focus group data suggests that teens may have confused Google+ with other Google products.

** Instagram was not included as an option but was the most frequently written in response for "other"; thus, it may be underrepresented relative to other sites and we have no data for non-use

		School	
		Devens High N = 98	SciCentral High N = 60
Age	14	4.1%	13.3%
	15	3.1%	26.7%
	16	9.2%	23.3%
	17	17.3%	11.7%
	18	66.3%	25.0%
Sex	Male	43.9%	43.3%
	Female	56.1%	56.7%
Parent's Highest Level of Education	Don't Know	13.3%	6.7%
	Some high school	31.6%	11.7%
	High school diploma	19.4%	28.3%
	College degree	27.6%	26.7%
	Advanced graduate degree	8.2%	26.7%
Race	Asian	16.3%	5.0%
	Black	21.4%	33.3%
	White	12.2%	31.7%
	Hispanic or Latino	44.9%	13.3%
	Other	5.1%	16.7%

Table 2: Demographics of survey respondents by field site.

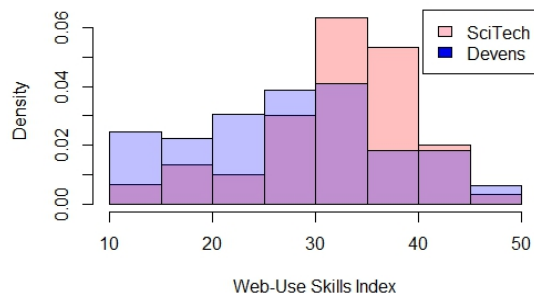


Figure 1: Overlaid distribution of skills by field site.

about 500 students, about 30% of which are economically disadvantaged and 65% of which are minority students. Our sample includes a diverse set of students (Table 2); note that the permission/assent protocol for minors presented a significantly higher barrier for participation than for 18-year-olds as we were required to make in-person or telephone contact with a parent or guardian of each survey taker who was under 18. Since many students had birthdays during the months of the study, some 17-year-olds reported waiting to participate until they turned 18.

The second population attends a suburban public high school that we call Devens High, located outside of a major metropolitan area in a different region of the country. Devens High also supports a science and engineering magnet program within its total student body of about 2500. Our sample from Devens includes both magnet and non-magnet students, although due to last minute changes, we were not aware of the magnet program until after the study had begun and did not collect data about which students participate in the program. About 55% of Devens students are economically disadvantaged and 75% are minorities. A disproportionately high number of older students participated at Devens not only because of the comparative ease of consent but also because school staff appeared to target senior-level classes for reminders about the study, which inflated the number of both 17- and 18-year olds. Three of the authors visited Devens for two days to conduct focus groups and interviews and to facilitate the consent process. Consent and assent for many students was obtained prior to the visit by providing the school with forms and self-addressed stamped envelopes. Receipt of forms was followed up by a phone call with parents.

Participants from SciCentral reported higher levels of parental education with over 25% of parents holding advanced degrees compared with 8% of Devens parents. Over 30% of Devens participants' parents had not completed high school. Students from SciCentral also reported a significantly greater understanding of Internet-related terms, $t(156)=-3.1$, $p=.002$, with a mean difference of 4.62, indicating they are more skilled and knowledgeable

in their use of the Web than students at Devens (Figure 1 overlays the distribution of skills in each school).

Participants were overwhelmingly social media users and reported more frequent use of Facebook than any other site (See Table 1), consistent with recent literature on teen social media use [25].

In terms of demographics, our sample is not representative of the general U.S. teen population; however, we were careful to choose culturally and geographically diverse field sites in order to capture a diverse set of practices. One clear limitation of our site selection is that all our participants attend high school. All students in the schools were invited to participate. Participants were given \$10 for their time.

FINDINGS

Our first research question aimed simply to establish the prevalence of asking questions using SNSs. In order to ensure they understood what we meant by SNS, we asked participants to indicate whether they had ever posted a question on several of the most trafficked SNSs and those we believed would be recognizable (i.e. Twitter, Facebook, MySpace) with the option of “No, I have not” and then prompted them to list any other sites where they had posted questions. We found that most of our participants had asked questions in SNSs and over half had answered questions (Table 3), higher than Morris et al.’s finding that 50% of adult Microsoft employees had asked a question on a SNS.

Who are the question askers and answerers?

Prior research has indicated that socioeconomic status and Web-use skills are predictive of certain online behaviors; in particular, higher Web-use skills have been associated with online activities that enhance social capital [17]. We believed that Q&A behaviors could be construed as capital-enhancing and were interested in whether higher levels of Web-use skills were also associated with asking questions online. We found that whether or not teens asked questions of their online social networks did not significantly differ by demographic characteristics, Web-use skills or by school. We found a marginal difference in skills between teens who have asked questions on SNSs ($M=30.7$) and those who have not ($M=27.5$), with question askers having slightly higher skills, $t(156) = -1.78, p=.077$. We do not know if reasons for asking questions or success in getting answers varies by skill level; future research could benefit from examining such questions.

On the other hand, our data shows that teens who *answer* questions have significantly higher skills ($M=31.1$) than those who have not answered questions ($M=28.1$), $t(156)=-2.02, p<.05$. Looking at the correlation between answering questions and skill level, we found a weakly significant correlation between answering questions and skills, $r(156)=.16, p<.05$, and a stronger correlation between answering questions and parental education $r(156)=.24, p<.01$. Answering questions of others in ones’ network may be a more powerful relational investment than asking

questions. These findings provide some support that Web-use skills are associated with teens’ Q&A behavior, but further research and more nuanced measures of such behavior are needed to make more substantive claims.

	Total (158)	Devens (98)	SciCentral (60)
Ever asked a question	77% (122)	74% (72)	83% (50)
Ever answered a question	61% (97)	60% (59)	63% (38)

Table 3: Prevalence of question asking and answering.

	Total (122)	Devens (98)	SciCentral (60)	
Asked on	Facebook	93% (114)	90% (65)	98% (49)
	Twitter	49% (60)	43% (31)	58% (29)
	MySpace	18% (22)	19% (14)	16% (8)
	Google+*	11% (14)	11% (8)	12% (6)
	Tumblr	11% (14)	7% (5)	18% (9)
	Instagram**	9% (11)	13% (9)	4% (2)
	Other	16% (20)	8% (6)	28% (14)
	None	23% (36)	27% (26)	17% (10)

Table 4: Top sites where participants had asked questions.

*Focus groups suggest teens may not know what Google+ is.

** Teens explained that they asked questions on Instagram either by using the app Instatext or in comments.

Participants were asked where they ask questions, and most reported asking questions on Facebook, followed by Twitter, MySpace, and Other (Instagram was a popular response in the “Other” category, and since it wasn’t included as an original option, it may under report the prevalence of asking questions on Instagram relative to other sites) (see Table 4). Question asking on specific sites did not differ significantly by demographic characteristics. The perceptions of a site as a useful source of information and frequency of using a site were both positively correlated with asking questions on those sites ($p<.001$), which makes intuitive sense.

What do teens ask their online social networks?

We collected data on what teens ask about in two different ways. First, we emulated the technique used by Morris et al. [26] to collect a sample of real questions by asking teens to provide us with examples of questions and answers they had posted themselves. Second, we used Agosto and Hughes-Hassel’s categories of teens’ everyday information needs [3] to find out whether participants ask questions of their online social networks to meet a broad set of information needs.

	Teens	Morris et al. [26]	Ellison et al. [10]
Factual Knowledge	39%	17%	7%
Opinion	25%	22%	40%
Invitation	11%	12%	7%
Rhetorical	7%	14%	--
Favor	10%	4%	47%
Recommend	9%	29%	4%

Table 5: Distribution of question types in our sample of teens compared to that of [27] and [11]

Category	YES has asked.	NO but would.	NO and would not.
School	76.6%	17.7%	5.7%
Social Activities	56.1%	27.4%	16.6%
Entertainment	50.6%	36.7%	12.7%
College	41.7%	46.2%	12.2%
Shopping	40.5%	35.4%	24.1%
Club or Org	35.3%	41.7%	23.1%
Daily Life	34.2%	41.1%	24.7%
Work	30.4%	47.5%	22.2%
Fashion	28.2%	32.7%	39.1%
Self Appearance	27.8%	22.8%	49.4%
Current Event	26.5%	42.6%	31.0%
Pop Culture	26.1%	43.3%	30.6%
Career	24.4%	48.1%	27.6%
Creative	22.8%	51.9%	25.3%
School Culture	21.8%	41.7%	36.5%
Romantic	19.6%	22.2%	58.2%
Family	19.6%	39.9%	40.5%
Norms	16.6%	46.5%	36.9%
Laws or Rules	16.6%	48.4%	35.0%
Philosophy	15.8%	33.5%	50.6%
Health	14.7%	44.9%	40.4%
Religion	12.0%	28.5%	59.5%
Public Safety	9.6%	40.1%	50.3%
Culture	8.9%	46.5%	44.6%
Sexual Identity	7.6%	21.0%	71.3%
Safe Sex	7.0%	20.4%	72.6%

Table 6: Occurrence of question asking to meet each information category. Ordered from most to least common.

We collected 118 examples of questions that teens had asked and coded them using the types of questions identified in [27] and also used by [11]. The first and second authors independently coded the corpus with a primary and secondary code if necessary. To test for consistent interpretation of the coding constructs, we used simple percent-agreement to check interrater reliability and

found that coders agreed 85% of the time on the primary code alone and 97% of the time on at least one of the codes. The coders discussed the few discrepancies to come to a resolution on the final coded set.

We found that teens were far more likely to report asking questions about factual knowledge than either of the two studies that examined adult behaviors or, in the case of Ellison et al. [10], may have included but did not specifically differentiate teen behavior (see Table 5). Our data stands in contrast to Ellison et al.'s finding that factual information was sought less often by younger posters than by older ones [10]. Many of the factual questions in our corpus involved information about school; for example, "Do we have school tomorrow?" or "What were the homework pages for math?" We observed in both survey and interviews/focus group data that many teens interact online with peers from school; because their lives are structured by the same institutions there is a high level of homogeneity in the kinds of information they need and this gives rise to plenty of opportunities for factual knowledge sharing.

Participants reported asking questions to satisfy all 26 categories of information needs but the influence of school as a shared life experience with their online networks was again apparent. (Table 6) Some surveys were completed at the schools and this may have influenced students to recall school-related questions; however, we do not expect this to impact their responses when prompted to report actual or potential use of social media to ask questions about school relative to social activities, entertainment, news, fashion, or other topics. To assess the validity of the information needs categories, we prompted participants to provide an example question for each category they had asked about. Two authors coded the example questions as representative of the information category, not representative, or too little context to tell. Overall, the two coders agreed 88% of the time and found that students provided example questions that were representative of the category 93% of the time. This suggests that participants interpreted the categories in the same way as the researchers. The categories for which students were least likely to provide representative questions were "Popular Culture such as celebrities, sports figures, musicians, etc." and "Creative Activities, such as dancing, singing, writing, etc." each with 79% representative examples.

What are teens' perceptions of social media as information sources?

We asked participants to assess the usefulness of different SNSs as sources of information using a scaled response to the prompt "I feel I get useful information from..." With the exception of MySpace, $r(154)=-.15$, $p=.06$, site use is significantly positively correlated with perceptions of that same site having useful information. See Table 7 for average assessment of SNSs as information sites. Our respondents assessed Facebook as having the same level of

usefulness as those in Lampe et al.'s 2012 study of university staff [21], from which the survey question was adapted, albeit with a higher standard deviation.

An indirect way to assess the utility of different sites as information sources is to look at the correlations between what students are asking about and where they are asking questions. To identify associations between SNS and topics asked about, we utilized Cramer's V correlation coefficient, which is designed to test the correlation between two nominal or dichotomous variables (see Table 8). Interview data bolsters our confidence in these numbers; for example, note the correlation between asking questions on Instagram and asking questions about Shopping, Fashion, and Self-Appearance. Some teens we interviewed mentioned sharing pictures of outfits that they were wearing or thinking of buying; others described using Instagram to search for pictures related to fashion.

	N	Min/Max	Mean	StDev
Facebook	157	1/5	3.55	1.26
<i>Lampe et al. [21]</i>			3.54	.89
Twitter	156	1/5	2.83	1.65
Tumblr	152	1/5	2.77	1.80
Google Plus	154	1/5	2.73	1.86
Pinterest	156	1/5	2.53	1.99
MySpace	156	1/5	2.40	2.03

Table 7: Assessment of SNSs as useful sources of information on a 5-point scale where 5 indicates the most useful.

	Facebook	Twitter	Instagram
Romantic			.303**
Daily Life	.241**	.195*	
School	.279**	.222*	
School-Culture		.258**	
Club/Org	.216*		
Shopping		.314**	.231*
Pop Culture	.231*	.210*	
Fashion	.286**	.237*	.191*
Social Norms		.244**	
Family		.227*	.210**
Self-Appearance	.233*	.229*	.340**
Work		.277**	

Table 8: Correlations between what participants have asked about and where they ask questions. *p < 0.05; **p < 0.01

Twitter is significantly correlated with the highest number of question topics (10) followed by Facebook (6). Because Twitter is used as a general communication channel at SciCentral, its utility as an all-purpose question-asking venue may be exaggerated in our dataset. Many interviewees indicated that their networks on Facebook included a greater range of relationship types, including

family members, acquaintances, and in some cases co-workers and teachers. As a consequence, interviewees mentioned avoiding personal topics on Facebook to minimize drama or awkwardness. These narratives substantiate correlations in Table 8, which suggest that Facebook is used more frequently for low-risk information sharing about school, clubs, culture, and less for personal content.

DISCUSSION

We introduced SNSs as useful question asking venues using boyd's characteristics of networked publics: persistence, searchability, replicability, and invisible audiences. To quickly recap, social exchanges that are *persistent* and *searchable* can become information resources long after the original exchange. Because they are *replicable*, the informational content of such exchanges can be broadcast, copied and reused. Finally, we suggested that *invisible audiences* may contribute to the sense that asking a question on SNSs is a useful behavior in the first place based on the perception that "someone out there" may have useful information to share. We discuss our findings in light of these characteristics and, in particular, the concept of audience, invisible, real, and imagined.

The idea that people may perceive "invisible audiences" as a potential resource is a paradoxical idea; it is, after all, precisely one's inability to perceive it that renders much of her online audience invisible. Bernstein et al. found that social media users consistently underestimate the size of their audience on Facebook – believing it to be just 27% of its actual size on average [6]. Yet, despite the fact that they misjudge audience, there is also evidence that people understand that their perception of audience may be faulty and take measures to mitigate the risk of unintended disclosures on SNSs [8, 10]. Perception of audience, real or imagined, is a critical aspect of social media Q&A: without an audience, one can't expect an answer.

On Privacy and Audience

Our data suggest that when participants post questions online, they do so not as an effort to "crowdsource" their information needs to a vast unknown mob of potential answerers, but instead intend to direct their questions to specific audiences they believe to have the information they need. In interviews and focus groups, it was clear that switching between private messages, text, Facebook, Twitter and other communication channels was common. Even a single channel can provide access to different audiences depending on how and whether privacy settings are used. Teens report a high degree of confidence in their ability to control the audience for content they share [25]. On Facebook, the most frequented site among our participants, privacy settings are increasingly complex and used increasingly frequently [32]. Asking a question through a status update can be done in a way that has the potential to be seen by millions or restricted to just a few individuals;

however, only about 18% of teens customize privacy settings to tailor audiences for specific posts [25], so this fine-grained control is not likely a common practice among our participants. During interviews, teens indicated that they had different networks on different SNS sites, and this differentiation between audiences helped dictate which site to use for what purposes.

The prevalent use of privacy settings and awareness of audience on different SNSs may also help explain the apparent contradiction between our finding that teens asked more questions related to factual information compared with adult or mixed populations and the finding of Ellison et al. [11], that requesters of factual knowledge in public Facebook posts tended to be older, not younger. If teens are limiting their status updates to friends or groups of friends, these would not surface in a corpus of public posts.

Norms and Rules

Our survey data demonstrated that school-related information was regularly sought and provided by our participants as they used SNSs to ask and answer questions. Since they were all high school students, our participants spent a lot of time in school and completing school-related tasks. In interviews and focus groups it became clear that the composition of online social networks and the potential audience for questions depended on the policies in place at the different schools, for example, it was difficult for students at Devens High to connect online with teachers and administrators because of the strict rules in place regarding teacher/student friending.

In contrast, SciCentral students reported that it was common to friend teachers and administrators online. Some examples of context collapse surfaced in interviews and focus groups when SciCentral students described instances of teachers and administrators observing posts. These included episodes that were perceived as distressing, such as being asked to meet with the principal to discuss inappropriate posts, but also included playful and unexpected episodes such as tweeting that one is “starving” during class and having the principal show up with a snack.

Self-Presentation: Asking Means you Don’t Know

Audience is also connected to identity management. Recent theoretical and empirical work has examined how social media users manage invisible or imagined audiences [23] and “context collapse,” which is the experience of sharing information or behaviors across multiple audiences that would normally evoke different performances [26]. Such concepts often emerge in discussions of performed identity or presentation of self. Manipulating privacy settings and switching networks can be used as strategies to re-segregate audiences and manage others’ perceptions. Critical for question asking: if people see you asking, they may realize that you *don’t* know about something, and/or, perhaps equally revealing, that you *want* to.

One obvious explanation for school-related questions being the most frequently asked type of question, aside from the perception of a knowledgeable audience, is that being assigned homework and attending school functions are so common and generally socially sanctioned that they carry less social risk if asked about than, for example, questions about sexual identity, health or religion.

Our survey data demonstrated both that school-related topics were common and that they were equally prevalent at both field sites, which indicates that the mere presence of teachers in SNSs did not encourage or discourage asking questions about school. Yet, the possibility of teachers and administrators encountering questions online took on qualitative differences when discussed in interviews and focus groups. Some students suggested that if teachers saw them asking questions of one another online, they might be perceived as cheating, whereas others seemed to think the practice was as unremarkable as raising one’s hand in class.

We have noted that school-related questions were the most frequently asked and we observed that they were usually mundane requests for information like reading assignments or schedules; unsurprisingly, in interviews and focus groups, students often provided examples of such questions, but were not interested in reflecting on them. The richer discussions happened around less common question types and reasons students wanted to avoid certain topics, which is difficult to capture in scaled survey questions. In other words, school is ubiquitous but not very interesting. As we continue analyzing interviews, we aim to develop a more robust understanding of the relationship between the perception of audience, self-presentation, and the kinds of information behaviors teens engage in on SNS.

Limitations

Although we were careful to collect data from diverse field sites and our sample represents a broad swath of ages, ethnicities and socio-economic backgrounds, it is not representative of the general United States teen population. We have described how the consent/assent protocol for minors that is required by our institution introduced considerably higher barriers to participation for younger high school students. In addition, because we conducted the research at high schools, our sample is limited to those students who attend school. The presence of science and engineering magnet programs at the schools may also have introduced a bias in our sample toward teens who are interested in science, technology, engineering and math and the common use of Twitter at one of the schools for communication among students, teachers and administrators may have introduced practices that are not common in high schools. Finally, the fact that many respondents completed the survey at school meant that they were unable to copy and paste questions from Facebook or other SNSs because these sites were typically blocked by the school district; these students had to rely on memory and paraphrase their remembered interactions.

We think it is worth noting the difficulty of capturing something as slippery as social media practices. Sites can become terrifically popular in a short period of time and, similarly, fall out of favor among specific groups. We witnessed this in our own data; we neglected to anticipate Instagram would be an important question-asking venue, yet it was written in many times as an “other.” One methodological response to this problem is to use interviews as a source for constructing survey instruments. Because we conducted interviews and surveys in parallel, we had to rely on the literature to inform survey design rather than craft an instrument that was responsive to the practices we observed in the field.

SUMMARY

Our survey data have laid a foundation for understanding teen Q&A behaviors on social media. We found that teens’ practices differ from adult practices documented in the literature in that they asked more questions related to factual information and that this stems in part from the shared life context of attending school. We found that answering questions is correlated with higher levels of Web use skills and parental education and suggest that question answering may be a more powerful social capital building activity than asking. We discussed these findings in the context of perceived audience, privacy and self-presentation. These findings begin to illustrate teen Q&A activities and raise questions for further research about what motivates teens to ask and answer questions and how they perceive different sites that could support Q&A.

ACKNOWLEDGMENTS

This material is based on work supported by the National Science Foundation Graduate Research Fellowship Grant #2011121873 and the Institute for Museum and Library Services Grant LG-06-11-0261. Thanks to our anonymous reviewers and Brian Dorn for their detailed feedback.

REFERENCES

1. Ackerman, M.S. and McDonald, D.W. Answer Garden 2: merging organizational memory with collaborative help. *Proceedings of Computer supported cooperative work*. ACM Press (1996), 97-105.
2. Adamic, L.A., Zhang, J., Bakshy, E., and Ackerman, M.S. Knowledge sharing and yahoo answers: everyone knows something. *Proceedings of the 17th international conference on World Wide Web*. ACM Press (2008), 665-674.
3. Agosto, D.E. and Hughes-Hassell, S., Toward a model of the everyday life information needs of urban teenagers, part 1: Theoretical model: Research Articles. *J. Am. Soc. Inf. Sci. Technol.*, 57, 10 (2006), 1394-1403.
4. Agosto, D.E. and Hughes-Hassell, S., Toward a model of the everyday life information needs of urban teenagers, Part 2: Empirical model: Research Articles. *J. Am. Soc. Inf. Sci. Technol.*, 57, 11 (2006), 1418-1426.
5. Ames, M.G., Go, J., Kaye, J.J., and Spasojevic, M. Understanding technology choices and values through social class. *Proceedings of the ACM Conference on Computer Supported Cooperative Work (CSCW)*. ACM Press (2011), 55-64.
6. Bernstein, M.S., Bakshy, E., Burke, M., and Karrer, B. Quantifying the invisible audience in social networks. *Proceedings of SIGCHI Conference on Human Factors in Computing Systems (CHI)*. ACM Press (2013), 21-30.
7. boyd, d., Why youth [heart] social network sites: The role of networked publics in teenage social life, in *Youth, identity, and digital media*, D. Buckingham, Editor, MIT Press, Cambridge (2008), 119-142.
8. boyd, d.m., *Taken out of context: American teen sociality in networked publics*. PhD Dissertation. University of California, Berkeley (2008).
9. Burke, M., Joyce, E., Kim, T., Anand, V., and Kraut, R. Introductions and Requests: Rhetorical Strategies That Elicit Response in Online Communities. *Proceedings of Communities and Technologies* (2007), 21-40.
10. Ellison, N., Vitak, J., Steinfield, C., Gray, R., and Lampe, C., Negotiating Privacy Concerns and Social Capital Needs in a Social Media Environment, in *Privacy Online*, S. Trepte and L. Reinecke, Editors., Springer Berlin Heidelberg (2011), 19-32.
11. Ellison, N., Gray, R., Vitak, J., Lampe, C., and Fiore, A. Calling All Facebook Friends: Exploring requests for help on Facebook. *Proceedings of the International Conference on Weblogs and Social Media (ICWSM)*. AAAI, (2013).
12. Erikson, E.H., *Identity, youth and crisis*. W. W. Norton Company, New York, (1968).
13. Fidel, R., Davies, R., Douglass, M., Holder, J., Hopkins, C., Kushner, E., Miyagishima, B., and Toney, C., A Visit to the Information Mall: Web Searching Behavior of High School Students. *Journal of the American Society for Information Science*, 50, 1 (1999), 24-37.
14. Forte, A. and Bruckman, A., Citing, writing and participatory media: wikis as learning environments in the high school classroom. *International Journal of Learning and Media*, 1, 4 (2009), 23-44.
15. Gasser, U., Cortesi, S., Malik, M., and Lee, A., Youth and Digital Media: From Credibility to Information Quality, Report, (2012), Berkman Center for Internet and Society.
16. Hansen, D.L., Holly A Derry, Resnick, P.J., and Richardson, C.R., Adolescents Searching for Health Information on the Internet: An Observational Study. *Journal of Medical Internet Research*, 5, 4 (2003).
17. Hargittai, E. and Hinnant, A., Digital Inequality: Differences in Young Adults' Use of the Internet. *Communication Research*, 35, 5 (2008), 602-621.
18. Hargittai, E. and Hsieh, Y.P., Succinct survey measures of web-use skills. *Social Science Computer Review*, 30, 1 (2012), 95-107.
19. Harper, F.M., Raban, D., Rafaeli, S., and Konstan, J.A. Predictors of answer quality in online Q&A sites. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI)*. ACM Press (2008), 865-874.

20. Harper, F.M., Moy, D., and Konstan, J.A. Facts or friends?: distinguishing informational and conversational questions in social Q&A sites. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI)*. ACM Press (2009), 759-768.
21. Ito, M., Baumer, S., Bittanti, M., boyd, d., Cody, R., Herr-Stephenson, B., Horst, H., Lange, P., Mahendran, D., Martinez, K., Pascoe, C.J., Perkel, D., Robinson, L., Sima, C., and Tripp, L., *Hanging out, messing around, and geeking out : kids living and learning with new media*. MIT Press, Cambridge, Mass., (2010).
22. Lampe, C., Vitak, J., Gray, R., and Ellison, N. Perceptions of facebook's value as an information source. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM (2012), 3195-3204.
23. Litt, E., Knock, Knock. Who's There? The Imagined Audience. *Journal of Broadcasting & Electronic Media* 56, 3 (2012), 330-345.
24. Livingstone, S. and Helsper, E., Gradations in digital inclusion: children, young people and the digital divide. *New Media & Society*, 9, 4 (2007), 671-696.
25. Madden, M., Lenhart, A., Cortesi, S., Gasser, U., Duggan, M., and Smith, A., *Teens, Social Media, and Privacy*. Report Pew Internet and American Life. (2013)
26. Marwick, A.E. and boyd, d., I Tweet Honestly, I Tweet Passionately: Twitter Users, Context Collapse, and the Imagined Audience. *New Media & Society*, (2010), 114-133.
27. Morris, M.R., Teevan, J., and Panovich, K. What do people ask their social networks, and why?: a survey study of status message: a behavior. *Proceedings of the 28th international conference on Human factors in computing systems*. ACM Press (2010), 1739-1748.
28. Morris, M.R., Teevan, J., and Panovich, K. What do people ask their social networks, and why?: a survey study of status message q&a behavior. *Proceedings of SIGCHI Conference on Human Factors in Computing Systems (CHI)*. ACM Press (2010), 1739-1748.
29. Paul, S., Hong, L., and Chi, E.H. Who is Authoritative? Understanding Reputation Mechanisms in Quora. in *Proc. Collective Intelligence Conference (CI)*, (2012).
30. Paul, S.A., Hong, L., and Chi, E.H. Is Twitter a Good Place for Asking Questions? A Characterization Study. *Proceedings of International Conference on Weblogs and Social Media (ICWSM)*. AAAI. (2011).
31. Rieh, S.Y., On the Web at home: Information seeking and Web searching in the home environment. *Journal of the American Society for Information Science and Technology*, 55, 8 (2004), 743-753.
32. Stutzman, F., Gross, R., and Acquisti, A., Silent Listeners: The Evolution of Privacy and Disclosure on Facebook. *Journal of Privacy and Confidentiality*, 4, 2 (2012).
33. Takahashi, T., MySpace or Mixi? Japanese engagement with SNS (social networking sites) in the global age. *New Media & Society*, 12, 3 (2010), 453-475.
34. Teevan, J., Morris, M.R., and Panovich, K. Factors Affecting Response Quantity, Quality, and Speed for Questions Asked via Social Network Status Messages. in *International Conference on Weblogs and Social Media (ICWSM)*, AAAI (2011).
35. Thom, J., Helsley, S., Matthews, T., Daly, E., and Millen, D., What Are You Working On? Status Message Q&A in an Enterprise SNS, in *ECSCW 2011: Proceedings of the 12th European Conference on Computer Supported Cooperative Work (ECSCW)*, 24-28 September 2011, Aarhus Denmark, S. Bodker, et al., Editors., Springer, London (2011) 313-332.
36. Turkle, S., *Adolescence and Identity: finding yourself in the machine*, Siman and Schuster, 1984, 137-162.
37. Yang, J., Morris, M.R., Teevan, J., Adamic, L.A., and Ackerman, M.S. Culture Matters: A Survey Study of Social Q&A Behavior. in *Fifth International AAAI Conference on Weblogs and Social Media (ICWSM)*, AAAI (2011).
38. Yarosh, S., Matthews, T., and Zhou, M. Asking the right person: supporting expertise selection in the enterprise. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI)*. ACM Press (2012), 2247-2256.