Freeways, detours, and dead ends: Search journeys among disadvantaged youth

Laura Robinson
Santa Clara University, USA

Abstract
This study examines American high school students' school-related information-seeking. Comparing advantaged and disadvantaged students' practices, the research illuminates three phases of their information-seeking activities: 1) learning-opportunities for digital skill building, 2) information-retrieval tactics, and 3) information-evaluation strategies. The inquiry delineates several distinct categories of practice corresponding to each of these phases. In successful information-seeking, learning-opportunities enhance skill acquisition for effective information-retrieval that is followed by discerning information-evaluation. In unsuccessful information-seeking, inadequate learning-opportunities result in ineffective information-retrieval that is followed by disengaged information-nonevaluation. Significantly, gendered differences emerge in this final part of the sequence. Findings indicate that unskilled female information-searchers are more likely to adopt an overtrusting stance. By contrast, unskilled male information-searchers are more likely to adopt an undertrusting attitude towards online content. Both groups of unsuccessful information-searchers truncate this necessary evaluative stage and end the information-seeking process before it can bear fruit.

Corresponding author:
Laura Robinson, Department of Sociology, Santa Clara University, 500 El Camino Real, Santa Clara, CA 95053, USA.
Email: laura@laurarobinson.org

Introduction

This article examines American high school students' information-seeking practices in relation to schoolwork. Interview and focus group data are analyzed to answer the following research questions related to online information-seeking:

1. How do unequal learning-opportunities facilitate or hinder the formation of digital information-seeking skills?
2. What information-retrieval strategies are practiced by skilled and unskilled information-searchers?
3. How do skilled and unskilled information-searchers evaluate information? Are there differences within each subgroup?

In answering these questions, the article reveals three different stages that make up the information-seeking process, as well as how these stages inform one another. In making connections between the stages, the research brings light to bear on an understudied facet of digital inequalities: how learning-opportunities affect both information-retrieval and information-evaluation.

Literature review

Propelled by the ubiquity of online information-seeking, the last decade has witnessed the rapid evolution of the literature. This article engages with three bodies of scholarly work speaking to information-seeking: digital inequalities, new media skills, and credibility evaluation.

Scholars of digital inequality point to the variable effects of new media activities that increase human capital (Chen and Wellman, 2005). Among these capital-enhancing activities, information-seeking is essential. Information-seeking necessitates both operational abilities to ferret out facts and evaluative skills to sift through information. Yet those without skills are disenfranchised from many of the benefits afforded by new media. Savolainen's (2008) study shows that economically disadvantaged adults are unlikely to acquire the requisite skills to seek for information effectively. Lacking skills, these adults struggle to effectively seek information online (Rieh, 2004). In this sense, information-seeking skills constitute one of the cornerstones of an egalitarian form of new media engagement.

Yet adults are not alone. Other studies tackle the myth of 'wired youth' to show that students from less privileged backgrounds are less likely to have sophisticated information-search skills (Robinson, 2009). Research also attends to differences in students' strategies for school-related information-seeking. When students carry out online searches for pre-specified items, but are not directed towards specific URLs, they shift back and forth between 'landmark' websites and results pages (Fidel et al., 1999: 30). Students' accounts of their own activities indicate that some students are more likely to engage in loose 'trial and error searching' (Watson, 2004: 158–159).

In terms of users' perceptions of their information-evaluation skills, existing research points to a disjuncture between the amount of information moderately-skilled users are able to obtain and their capacity to judge its reliability and veracity. Fallows (2005) finds that users' confidence in their ability to judge the reliability of information is often misplaced. Even though a very small percentage of users actually takes steps to ensure the reliability of search results, Fallows concludes that 8% of American internet users believe that they can obtain 'a fair and unbiased source of information' from search engines, and 92% believe that they can use internet search engines effectively. Inquiries into 'credibility assessment' pinpoint 'evaluative behaviors' directed at online content. Wathen and Burkell (2002) distinguish between online content's 'surface' characteristics and the 'message' characteristics users employ for credibility evaluations. Metzger (2007) also reports that unskilled users judge websites' credibility on their format and appearance; these users fail to verify authors' credibility.

Although studies show that evaluation skill gaps also exist between students, previous research offers only a few tantalizing glimpses of the ways in which students understand the consequences of different authorship and production models for the credibility and trustworthiness of online content. While some college students cross reference sites and look at domain suffixes (Hargittai et al., 2010), others forgo obtaining the most credible information in order to gain speed and convenience (Rieh and Hilligoss, 2008). Some college students acknowledge the possibility that *Wikipedia* entries may not contain reliable information. Others make distinctions based on the perceived level of editorial gatekeeping (Rieh and Hilligoss, 2008: 59).

Although some studies indicate the importance of the evaluative stage for college students (Head and Eisenberg, 2010), we know less about high school students (ages 14–18). Due to the dearth of research, it remains unclear whether high school students resemble their older counterparts. This concentration on college students does not lend itself to the analysis of information-seeking on the part of socioeconomically disadvantaged youth lacking information-seeking skills. While valuable, the existing literature largely targets youth from economically privileged backgrounds with abundant home resources. Given these gaps, the information-seeking practices of disadvantaged high school students remain unclear.

In sum, previous literature has much to say about how relatively advantaged youths seek out and evaluate online information. But American youths are neither uniformly wired nor equally engaged in online information-seeking (Robinson, 2009). Thus, our lack of knowledge about the less wired and disengaged segments of the youth population is a hindrance to the further development of the field. Work is needed to reveal the contours of information-seeking among this understudied group of partially wired internet users who vary widely in their skills and information-evaluation engagements. The need for such analysis is especially acute in view of the fact that more and more American high school students, whatever their level of material deprivation, are asked by educators to seek out information online. Finally, it remains to be seen what role the intersection of class and gender may play in the information-seeking and evaluation processes. In beginning to answer these questions, this article contributes to the literature on digital inequality, information-seeking, and credibility evaluation.

Data and methods

Part of a larger longitudinal, multi-method analysis of digital inequality among high school students in agricultural California, the present analysis relies on qualitative data. In this study, the data are drawn from focus group and one-on-one interviews with high school students from a single low-income school. Although the school population is economically diverse, the school meets the '35% rule' to be classified by the State of California as a 'Title I' or high-poverty school. With a substantial proportion of students qualifying for government-funded 'free lunch,' the school has a significant number of students living at or below poverty level. This being said, the higher percentage of economically disadvantaged students does not preclude economic diversity in the school. Some students with highly educated and affluent parents do attend the school. Their attendance is due to a number of factors such as public school zoning and especially parents' ideological commitment to support public education. This economic diversity allows for the analysis of variation in material resources.

The one-on-one and focus group interviews were conducted in 2010 and 2011 with seniors. Over 300 (n = 319) seniors enrolled in English classes took part. Data collection was administered through the English Department because all respondents must take four years of English courses. This strategy ensured that the interviews would reflect the full diversity of patterns evident across the seniors while holding grade level constant. For those unfamiliar with the American system, seniors are 17–18 year-old students in their last year of high school or 12th grade. In general, students take 'regular,' 'college preparatory,' 'honors,' and 'advanced placement' courses. Of the four kinds of classes, college preparatory, honors, and AP classes prepare students to go on to university study; in addition, AP classes enable students to take exams to earn university credits.

All seniors in 12th grade English Department classes were invited to participate. There was no selection process including or excluding some students. Although students were given the choice to opt out, no student chose to do so. In addition, the focus groups were carefully assembled to ensure that gender bias was not created by their composition. Specifically, focus groups were composed of: 1) only female, 2) only male, and 3) both female and male students. Data from each focus group were systematically compared to ensure that the data was not biased by the gender composition of the focus group.

The focus groups and interviews were conducted during normal hours on the school campus. All participants were asked the same questions on topics including:

- Learning-opportunities, IT, and academic classes;
- Material informational resources at home/school/third places;
- People as informational resources at home/school/third places;
- Information-seeking practices: browsing, information-retrieval, and search strategies;
- Information-evaluation practices: trustworthiness assessment and evaluation strategies;
- Websites used for schoolwork.

Hypothetical questions also asked students to generate search terms for prompts including, 'What myths inspired Sophocles' plays?' and 'Trace the sources of Shakespeare's plays from earlier writers.' Another exercise asked students to evaluate information on *World Book Encyclopedia* online and *Wikipedia* to explicitly compare students' understanding of traditionally versus and collaboratively edited resources. The questions were open-ended. Formalized skill-testing was not carried out. Therefore, the data presented should be understood as student narratives and self-reports. This being said, to ensure the reliability of the data, observational data from the larger study was reviewed and used as a point of comparison. Although it is not reported in this article, the data confirms that: 1) students' search narratives reflect actual behavioral patterns that were observed and 2) that students were not simply doing facework in the interviews and focus groups.

Regarding methods, one-on-one and focus group interviews are particularly suited to exploring 'everyday practices that are not well understood' (Christensen, 2009: 437) and elaborating respondents' conceptualizations or 'social maps' (Luker, 2009: 183). To analyze the data, an iterative process relying on multiple rounds of open coding, re-coding, and focused coding was used. This approach grounded the analytic categories in the data. Analytic frames were generated by moving back and forth between the data and the patterns that emerged from the data during the analysis. In the open coding stage, the information-seeking process was coded according to several categories corresponding to different phases: learning-opportunities, information-retrieval, and information-evaluation. Through recoding, several subcategories of practice emerged: 1) adequate and inadequate home, school, and peer-based learning-opportunities for skill acquisition; 2) effective and ineffective information-retrieval; 3) information-evaluation and nonevaluation; and 4) gendered differences in evaluative patterns. These patterns were confirmed through additional iterations of focused coding. Subsequently, targeted codes were developed and used to recode the entire dataset. Focused coding was enlisted to systematically verify and confirm the patterns. Through this iterative process, generalizations were developed and verified through a process of code and recode. This process ensured that the analytic categories were grounded in the data. This being said, as the data are drawn from a single case study, the goal is to provide rich analytic description of understudied phenomena rather than to provide a foundation for generalizations to larger populations.

Successful information-seeking

Stage 1: learning-opportunities and skill acquisition

This first section illuminates the initial stage of the information-seeking process: skill acquisition through learning-opportunities. Analysis of learning-opportunities draws on work done by Livingstone and Helsper (2007) to examine the kinds of opportunities for online activities and practices open to British youths. Students' narratives reveal three primary paths to digital skill acquisition: learning-opportunities at home, learning-opportunities at school, and learning-opportunities from peers.

The majority of the students who engage in successful information-seeking have enjoyed plentiful learning-opportunities at home favorable to building a solid digital skill

base. Students' narratives indicate that learning-opportunities at home result from high-quality home internet access, family members who transmit skills, and plenty of time to sharpen their skills on the computer. Concerning high-quality home access, Carmelita[1] describes: 'I can't remember a time when I wasn't using the internet for schoolwork. We've always had a computer at home…' Regarding family members who transmit skills, Michael notes, '…needed help from my dad at first but now I'm the one showing him what to do!' As for temporal resources, Robbie explains how he has plenty of time and access to material resources with which to conduct his information-seeking activities at home: '…when I get an assignment I take my time—ya know, poke around [on my computer] and see what I find…' Students' narratives reveal that favorable home learning-opportunities provide plentiful IT resources and knowledgeable individuals that enhance skill acquisition. These findings corroborate results from previous studies that point to favorable ICT access conditions as key predictors for students' productive use of internet resources, particularly for schoolwork (Eynon and Malmberg, 2011).

While some students enjoy favorable learning-opportunities at home, others encounter their primary learning-opportunities at school. Carlos recounts enhancing his information-seeking skills with the aid of school-based learning-opportunities:

> In my AP class with Mrs. Brown we kept going in the lab to learn how to do research on the internet. She taught us how to look up what we needed for our papers in many different ways… it made me want to learn how do it on my own…also went in after school so that she could keep helping me learn how to do it.

Students like Rosemary who develop information-seeking skills at school draw on learning-opportunities provided by educators. Rosemary elucidates: 'Mrs Dwyer taught me how to look up things on the internet, check the information…she even lets me come in after school even though I'm not in her class anymore.' Educators can both provide access to resources and act as a proxy for parental guidance to build information-seeking skills.

The development of information-seeking skills can also occur through peer networks. Under-resourced students' narratives reveal that skilled peers provide important learning-opportunities. Tamara recalls 'teaming up' with peers who taught her about online databases she needed for her school-related information-seeking:

> I was in a group in my AP class when we went to the [computer] lab for a big assignment a bunch of times…didn't know what to do, but the other students in my group were real nice… showed me what to do…how to look stuff up…use Google Scholar, that's what got me started—you know made me realize I could do it too.

Peer learning-opportunities also materialize in third places such as other students' homes. Chelsea indicates how her information-seeking skills had been jumpstarted: 'I guess I really learned how to Google 'cause of my boyfriend Frankie. He was always on the internet so I kinda' picked it up by being with him so much.' While peer learning-opportunities can enhance internet search skill acquisition, this is only likely to happen when under-resourced students come into contact with more-skilled peers and friends who are

generous with their knowledge and access to material resources (Eynon and Malmberg, 2011: 10).

As students' narratives in this section have indicated, under-resourced students can acquire skills through both school- and peer-based learning-opportunities. However, this recipe for successful skill acquisition also requires another ingredient: the opportunity to practice skills. Students like Kathleen benefit from being able to practice at school: 'Mr. Flores made sure we got to go into the lab for his class—he always says "Practice makes perfect."' Maria explains how she actively seeks out access venues at school and third places to cement her skills:

> …if I learn something I like to practice it to make sure I've got it right…so I go into the [computer] lab or career center every chance I get—at lunch, break, before school, after school, you name it. If it's open, you can find me there…

Samara relies on repetitive skill building at a friend's house: '…when I can, I go to my friend Leila's house…she always knows cool stuff…like she'll say "You look up this on Google and I'll look up that on Bing"…so that we can compare what we find.' When under-resourced students are able to refine their skills, they can succeed in acquiring digital skills from educators and peers.

Stage 2: effective information-retrieval

Learning-opportunities allow students to acquire the skills necessary for effective information-retrieval. When given information-search prompts related to hypothetical school assignments, skilled students employ an assortment of effective strategies for information-retrieval. These strategies are: 1) identify and isolate keywords, 2) paraphrase keywords, 3) use Boolean searches, 4) reformulate search prompts, and 5) run comparative and concurrent searches with multiple queries. Using these strategies hones their search terms and allows searchers to avoid two extremes: searches that are too narrow or too broad. By using them, skilled students are able to hit the sweet spot in their information-retrieval. They succeed in maximizing the efficiency of their searches in terms of the length of the search sessions and the number of page results viewed prior to finding an acceptable answer to the search prompt (Jansen et al., 2009).

Skilled students use several strategies to develop effective search terms for information-retrieval. The first strategy is to identify appropriate keywords. When given the prompt 'What myths inspired Sophocles' plays?' skilled searchers like Grace identify and link promising keywords in searches such as: 'mythology and Sophocles.' In addition to targeting keywords, skilled students like Ross also remove words that could detract from the search such as 'inspire' from their search terms: 'myths Sophocles.' The second strategy is to paraphrase or use synonyms for keywords. For example, when given the prompt 'Trace the sources of Shakespeare's plays from earlier writers,' Brenda uses the formulation 'previous writers Shakespeare.' In Molly and Joey's successful information-retrieval, they employ the search terms: 'writers influence Shakespeare' and 'Shakespeare's inspiration.'

The third strategy, using Boolean search terms, is apparent in Zoë's search: 'myths + Sophocles.' Max spreads his search net even more widely with: 'source* Shakespeare* play*.' Other skilled searchers like Regina capitalize on the advanced option through which she performs the Boolean search by choosing the option *one or more of these words* with 'previous' or 'earlier.' The fourth strategy is to reformulate the prompt to turn it into a well-designed search query. Zach uses the query, 'What were Sophocles' mythological sources?' Cristina formulates: 'What influenced Shakespeare?' Fifth, to maximize their information-retrieval, skilled students exploit multi-tasking. They open multiple tabs or pages to run concurrent searches in multiple browser windows. Jill says: 'Yeah I'll Google it but also use Yahoo and Dogpile.' Mauricio relates: 'I'll keep two Google windows open. Do different searches in each. Choose the best one.' Multi-query information-seeking is particularly effective when used adaptively (Spink et al., 2008).

If unsatisfied with an initial attempt, skilled respondents modify and then resume their searches. Unlike their less-skilled counterparts, skilled respondents tweak their searches until they are contented with the results. Rather than giving up, Dan frames information-retrieval as a game or challenge: 'It gets me going if I miss on the first try. Makes me want to try harder.' Undaunted, a failed first effort becomes a challenge for Patricio to 'beat the machine.' Skilled students reveal secondary strategies including moving between general and advanced searches, adding to or deleting from their search phrases, or changing their search terms altogether. Lillian combines multiple strategies to generate the most relevant results possible: 'I keep going until I find the best answer.'

Constantly adapting his strategies, Sam improves his chances of effective information-retrieval: 'I'll keep putting in different words until I get what I need.' By applying a number of information-retrieval strategies, skilled students search effectively. Cathy reports that effective information-retrieval yields relevant results: '…it gave me a lot of information and a lot of different websites where I can find the information.' Ron and Hamilton are able to easily retrieve answers corresponding to their queries: 'I found what I was looking for' and 'It gave me exactly what I needed the first try.'

Stage 3: information-evaluation

For the information-search process to be complete, once information is retrieved, it must be filtered or evaluated. This section details the final stage of the information-seeking process: evaluation. Skilled searchers use several evaluation strategies to determine credibility. In evaluating the results of their information-retrieval, skilled students identify: 1) the domain suffix, 2) authorship, and 3) the author's credibility. Their strategies are similar to those employed by college students (Hargittai et al., 2010). Hargittai and her collaborators find that wired college students capitalize on a variety of credibility cues, including organizational affiliation, website format and presentation, content presentation, and authors' identities and affiliations. In this section, these high school students apply evaluative criteria similar to those applied by more experienced college students.

A high level of evaluative literacy prevails among skilled students like Rodrigo. He is keenly aware of each website's domain suffix: 'First thing I check is the ending. If it's .edu or .gov I'm probably gonna trust it.' Natalia takes a similar stance, 'For me .com doesn't mean a thing…if it's .edu you know it's a professor something.' Skilled students such as Naomi identify authorship to ascertain credibility: 'I need to know who wrote it…You want to know: Who is this person? Is it someone with some kind of cred or some yahoo behind the keyboard?' Boris humorously concurs, 'Who done it? That's the question right there!'

Once skilled searchers determine the author, they must also identify the author's credentials to establish that individual's expertise and authority. Cindy details, 'I found this site by this person who is a professor in the English Department of a university. I think she's good for any information on Shakespeare.' Jeremy takes a similar evaluative position: 'I'm not going to pay attention to some random person. I'm gonna look for someone who knows…the person and what they're talking about have to fit.'

Skilled searchers must be conversant with the mechanics of authorship in order to distinguish collaborative production. Understanding who can post information and who can edit it is critical to Andreas' evaluation: '*Wikipedia* is a free post site, where anyone can post info and edit it, so you have to be careful about what's true and what's not… *World Book* is more accurate than *Wikipedia* because it has a better process of taking in information.' Aurora declares, 'I always want to know how something works…if I don't bother to find out who created the website or who is posting I'm just asking for trouble.' James articulates, 'Sometimes you can't tell who wrote it…you have to find the "about" or "overview" or "who we are."'

In parallel with information-retrieval for skilled students, information-evaluation is an iterative process that may require multiple steps that build on one another. Oliver explains how he compares information across multiple sites and cross references sources:

> Information is important. But even more important is knowing that the information you have is valid, reliable, authoritative, and pertinent. When information is filtered—reviewed, authenticated, and evaluated—end users come to trust the source and accept an expert's assessment that it is valid and authoritative. When it isn't, end users must assess and evaluate the information themselves. And because the internet is a vast network of ever-growing, unfiltered information sources, this is particularly true in this medium.

In Sabrina's view: 'The only real way to tell the difference is double check the information you found with a couple more sites to see if the information adds up.' For her, it is critical to cross check information from sites such as *Wikipedia* against information drawn from other sites in order to assure trustworthiness.

In terms of what has been termed 'self-conception' (Eynon and Malmberg, 2011), skilled students see themselves as shrewd evaluators with the competence to assess credibility. Skilled students understand that they are responsible for verification and evaluation. Geraldine urges, 'It's not magic. Nobody's gonna do the work for you. You have to decide. Do your research assignment properly.' Skilled students know they are

responsible for the entire information-seeking process. Phil jokes, 'Ain't no free lunch. It's up to you. You find it, read it, think about it, do it…'

Also related to self-conception, skilled students report an interesting social media effect. Students who report regularly crafting their identity presentations on social media sites have a heightened sense of the importance of information-evaluation. These students are aware of how 'easy' it is to post information online. Stephanie considers:

> If any site is at all like MySpace then you gotta be real careful…I mean I use *Wikipedia* for kicks but I make sure to check it when I use it…but if I really think about it…I mean who are these people writing *Wikipedia* anyway? Like seriously—it could be my little brother!

Constantly creating content themselves in their curatorial efforts (Hogan, 2010), skilled students do not trust in information producers' beneficence. Rather, skilled students take on the responsibility for verification and evaluation themselves. Andrew describes, 'It is very easy for someone to make a web page and fill it with lies, and if someone lacks the knowledge to validate the information then the incorrect information goes on without being noticed…'

In sum, the successful information-seeking sequence begins with learning-opportunities for skill acquisition. In turn, once they have acquired skills, these students retrieve information using a variety of strategies. Third, the sequence concludes with the final stage of information-evaluation. Here, skilled students bring a portfolio of filtering competencies to bear on their evaluative efforts. As the data analysis indicates, there is no gendered divergence apparent in any of the three stages of successful information-seeking.

Unsuccessful information-seeking

Stage 1: learning-opportunity shortages and lack of skills

The second half of the analysis explores the three stages of unsuccessful information-seeking. Students who experience learning-opportunity shortages do not acquire digital skills critical to information-seeking. Their inadequate skill base typically results from a lack of learning-opportunities at home, school, and third places. Suffering from a paucity of learning-opportunities on all fronts, these students do not acquire dexterity with using IT.

On the home front, these students cannot draw upon either material resources or knowledgeable family members for learning-opportunities. Pedro explains that he never gets to look for information online because his family doesn't have a computer: 'I don't ever use the internet—we don't have it at home. No one in my family uses it.' Without either computers at home or well-informed family members, Pilar and Sid acknowledge that they have not had sufficient opportunity to learn or practice information-seeking. In Pilar's case, she has yet to learn how to search for information effectively: 'I don't do it very much…My parents don't know how to use the internet—they can't help me.' This is also true for Sid, who relates, 'There is no computer at home…There is no one at home to help me.'

Equally deleterious, their engagements with new media at school also leave them without sufficient exposure to IT learning-opportunities in this environment. All students may choose to enroll in regular or college preparatory classes such as AP, as well as a variety of occupational training courses. However, not all students know that their choice of courses has consequences for their IT learning-opportunities. College preparatory courses offer greater IT instruction and access to the computer lab or classrooms equipped with computers. By contrast, regular classes and many occupational training courses lack IT-based instruction. Most students are unaware of this connection. It is not clear to students like Enrique that they will forfeit IT learning-opportunities by enrolling in regular, non-college preparatory, classes: 'We don't use the computer lab in my classes—except once but that was a long time ago.' Students in regular classes like Randy rarely go to the computer lab or enjoy classrooms equipped with computer mini-banks: 'I can't remember the last time I was in the computer lab.' Compounding the problem, students in regular classes are far more likely to enroll in occupational training courses that also lack IT. Fernando explains: 'I didn't take any keyboarding classes. I took shop instead…I wanna be a mechanic…don't need to learn about computers.'

The domino effect continues with regard to peer-knowledge networks. Once they are enrolled in regular and non-IT occupational training classes, these students are less likely to encounter learning-opportunities connected to peer networks (Eynon and Malmberg, 2011). As Felicia explains, her friends are not in a position to teach her information-seeking skills, 'I don't think that my friends use the computer any more than me [sic].'According to Juan, 'I don't go online for my homework.' Ironically, many of the students who have greatest need of IT learning-opportunities at school are least likely to take advantage of classes with skill-building benefits. These students are also least likely to profit from learning-opportunities with educators and IT peer-knowledge networks. As these narratives indicate, in a negative feedback loop, failed skill acquisition is perpetuated at home, in school, and with peers.

Stage 2: ineffective information-retrieval

Learning-opportunity shortages result in weak or non-existent skills with which to retrieve information. Unlike their skilled counterparts, unskilled students have not had successful information-retrieval modeled for them by parents, educators, or peers. When asked to walk through the same information-searches related to hypothetical school assignments, unskilled students' information-retrieval efforts are ineffective.

Given the same prompts on Sophocles and Shakespeare, unskilled students are unable to isolate promising keywords. Rather, they use general terms that produce information irrelevant to their queries. In response to 'What myths inspired Sophocles' plays?' unskilled students like Suzy are most likely to use overly broad search terms such as 'Greek plays.' Like Suzy, Cesar neither devises his own search terms nor uses a targeted query with his search on 'Sophocles.' Not surprisingly, Suzy's and Cesar's ineffective information-retrieval does not yield relevant results: 'Google doesn't give me what I want,' and '…it didn't give me a good answer to my question.'

Most important, unlike their skilled counterparts, these students lack the skills to use one search to improve the next. Melissa explains: 'I don't know what to try next.' Unskilled

students engaging in ineffective information-retrieval do not perform iterated searches based on revised terms. When asked why they do not reformulate their search terms and search again, Marta and Cameron acknowledge: 'I just didn't know how to look for the right answer' and 'I wasn't sure how to do better.' When hard-working students do not know what to do to produce better results, they concentrate their efforts on reading the information that they have found. Benito laboriously visits every link that appears from his single search attempt: 'I just kept reading and thinking the right answer would show up.' Lacking a battery of skills, unskilled searchers fail to employ effective information-retrieval strategies such as attempting simultaneous search attempts or experimenting with multiple search terms or engines.

Stage 3: information-nonevaluation

Finally, unskilled students do not complete the evaluation stage of information-seeking, leading to an abbreviated search process. When nonevaluation occurs, the information-seeking process is prematurely truncated. Significantly, unskilled students' unsuccessful information-seeking strategies neglect this third evaluative stage in two different ways: naïve overtrusting or disengaged undertrusting. Here we see a fascinating gender difference. While exploratory, these findings suggests that naïve overtrusters are predominantly female, and undertrusters are predominantly male.

Regarding overtrusters, these primarily female information-searchers assume that the information they encounter is invariably true. They fail to engage in information-evaluation by passively abandoning the task of filtering and indiscriminately accepting the veracity of all information regardless of provenance. Claudine says, 'If it looks good, it's probably true.' Jill states, 'If it's on the internet, it doesn't matter who wrote it.' When asked how they validate information they find for schoolwork, overtrusters report non-evaluative, superficial strategies based on the site's 'look.' Overtrusters like Julia, Trixie, and Joy report blithe confidence in sites that 'give lots of information,' have 'good pictures,' and 'look professional.' When asked how they identify authorship of entries on *Wikipedia* and *World Book Encyclopedia* online, Linda and Juanita respond with: 'I don't know' or 'I don't pay much attention to that.'

These naïve search practices are the result of overtrusting at the evaluative stage. Unlike their skilled counterparts, these unskilled students do not assume responsibility for information-evaluation. They implicitly posit that it is the responsibility of the information producer to ensure that online information is credible and reliable. Overtrusters Shelly and Celine assume that everything, or almost everything, on the internet 'must be true' or 'should be true' because it is written by 'experts' or 'smart people.' Alicia explains: 'I think that most of it is true because I figure that the people who write it know what they're talking about…' According to Marcia, 'I think the information on the internet is mostly true because that person took the time to put it on the website so it should be true.' Belinda believes that: 'The facts are from people that do their research and try to see and figure out and do find what they need.'

When asked how they assess the results produced by information-seeking, these unskilled students express great faith in search engines to evaluate information for them. Mae confides: 'I feel I could always trust internet searches.' Perhaps most telling, some

of the female students favoring nonevaluation actually believe that search engines act as a kind of truth filter. Jan says, 'Google only gives you right answers.' Beatrice thinks: 'It checks out everything for me.' Talia declares: 'It like leaves out the wrong stuff.' When these unskilled students exhibit this nonevaluative orientation towards internet content, they naïvely assume that unnamed information gatekeepers vet the information.

At the same time, these unskilled students are perilously confident and unaware of their skill gaps. When asked about their evaluation practices dealing with information on *Wikipedia* and *World Book Encyclopedia* online, they report drawing little distinction between the two sites. Regardless of the website or authorship, Kelly believes that the information is true 'because they have to say the truth.' Betsy thinks that all online content is believable 'because it should be true.' Lucy places childlike trust in omniscient and benevolent experts: 'I don't know the people who wrote the content personally and most of the time I believe what they wrote because I'm not the smartest person in the world and they are probably way smarter than I am.' Sally questions why any content producer would post anything untrue, asking: 'If it wasn't true then why put in something that is not true?' Mabel exclaims: 'If it was not true why would it be on the internet?' Lacking information-evaluation skills, they expect total honesty and competence from all information producers. As Charlene concludes: 'I think all the information that they have in the internet has to be right or why would they have it there if it is wrong?' These female students' tendency to accept everything as a matter of blind faith recalls the 'gullibility errors' detected by (Tseng and Fogg, 1999).

By contrast, a smaller group of male students intentionally disengages by reflexively rejecting the credibility of online information in toto. As these unskilled students reject *any* internet content as intrinsically suspect, they effectively withdraw from the information-evaluation process (Savolainen, 2008). They refrain from even attempting to draw the distinction between credible and unreliable information by removing themselves from the information-seeking process. In stark contrast to their overtrusting female counterparts, these males intentionally disengage from the search process. For Mike, 'There's basically nothing true about the internet.' Further, unlike overtrusting females, these males are aware that they lack information-evaluation skills. Charlie manages his skill gaps by refusing to engage in evaluation: 'Could be true. Maybe not. If you don't play, you can't lose.'

Unable to distinguish the more credible from the less credible, these unskilled males simply tar everything with the same brush; they express deep suspicion and distrust of any and all online information. For Bill: 'Most of the stuff you read is lies or bullshit…' Jorge warns: 'There are some that are just there to trip you out.' Barney's search narratives are peopled with nefarious information malefactors: 'There's people who lie on the internet.' Joe thinks: 'People nowadays try to do anything to be recognized or to become popular or try to get attention!' According to Adam: 'There are a lot of phonies out in the world putting up fake stuff on the internet.' In sharp contrast to the unskilled females' trust in information producers' benevolence, these males adamantly assume that information producers are prompted by the worst motives.

While these undertrusters believe that it is up to them as information consumers to evaluate information, their crucial problem is that they cannot differentiate between reliable and unreliable information. For Luis: 'You don't know if it's true or not.' Lyle

assumes that any online content may be false: 'Sometimes it could be a lie and sometimes it can't so really you don't know.' Alan reports, 'Sometimes people just put things in the internet and they are lying. Others can be true but how could we tell?' Lacking evaluation skills, undertrusters adopt the safest strategy possible—either extreme wariness or a strategy of total disengagement. Felipe refuses to risk looking foolish: 'Don't want to look for something and believe it is true but in reality [it] is false.' By refusing to evaluate information, Luke can avoid being 'tricked,' and David can't be made into a 'sucker.'

Their undertrusting nonevaluation appears to leave them in control. Without understanding how collaborative authorship or web content creation works, they adopt a coping strategy of total disengagement. For Gabriel: 'Sometimes the information is not true, because everybody can edit a page so those people would be wrong or make some mistakes on their page.' Vaguely aware that online content is not always stable, Stan can't get off the fence: 'Everyone can edit the information and that doesn't make things valid or does it?' For Sergio, 'Anyone can make a website that's fake and say a bunch of nonsense.' For these male undertrusters, their masculine self-conception demands that they maintain control even if it means losing potential benefits in the process and stopping the information-seeking process before it can bear fruit.

Discussion

Seeking search skills

This study illuminates the three phases of the online information-seeking process among American high school students searching for information-related to their school assignments. The research presents three stages of the process: learning-opportunities for skill-building, information-retrieval, and information-evaluation. This sequential analysis establishes inter-relationships between each of the stages among skilled and unskilled students. Findings reveal that the stages are interrelated yet analytically distinguishable moments in an information-search process that unfolds over time.

The data indicate that for information-seeking to be successful, each of the three stages is essential. When the three stages of information-seeking are looked at synoptically, it becomes apparent that the acquisition of skills serves as a necessary condition for effective information-retrieval and evaluation. Learning-opportunities at home, in school, and from peers are essential for students to acquire IT skills. Learning-opportunities give students material access to resources and skill modeling that is internalized and replicated through practice. Students bring these skills to bear on their information-retrieval efforts. During the information-retrieval process, they marshal an impressive array of techniques to procure information relevant to their queries. Subsequently, they employ evaluative skills to verify the accuracy of the information they have retrieved. Each stage facilitates the next and allows students to seek information successfully.

By contrast, unskilled students face a dearth of learning-opportunities at home, in school, and among peers. As a result, these students are not prepared with the digital skills they need for either of the subsequent phases of information-seeking: retrieval and evaluation. Lacking skills, they are unable to obtain information relevant to their queries

and flounder during the information-retrieval stage. By the time they reach the evaluative stage of the information-seeking process, these students embrace a single strategy of expediency, namely nonevaluation. In a domino effect, each stage hinders the next and blocks unskilled students from seeking information successfully.

Gendered roots of digital disengagement

Turning to gendered differences, the examination demonstrates gender convergence between female and male skilled students across the three stages. In the first stage, both groups of skilled students take advantage of learning-opportunities. In the second and third stages, skilled students parlay their competencies into impressive retrieval and evaluation practices.

In contrast, significant gendered differences manifest themselves between unskilled female and male students. Deprived of access to learning-opportunities at home, in school, and among peers, neither female nor male students have skills to bring to bear on their information-retrieval. However, in the third and final stage of the information-seeking process, gender comes into play among these unskilled students. Unskilled students' practices associated with the stage at which information should be evaluated and interpreted exhibit by far the most diversity and complexity relative to the two other stages. The study identifies how this very important but neglected *choke point* in the information-seeking process assumes a gendered form.

Here we see how distinctive gendered identities drive truncated information-seeking. Overtrusting and undertrusting nonevaluation strategies are polar opposites in their origins. Unskilled females' overtrusting acceptance of all information as true 'because it should be true' reveals one self-concept. Unskilled males' undertrusting and almost hostile suspicion of information as potentially 'fake' illuminates another self-concept. Both result from inadequate information-evaluation skills. While unskilled females are more likely to overtrust and unskilled males are more likely to undertrust, neither group completes the information-seeking process.

These gendered self-concepts are implicated in both of these refusals to evaluate online content. When the overtrusting females refuse to evaluate online content, they impute benevolence to unknown information producers. In sharp relief, when undertrusting males cannot properly evaluate the information they encounter on the internet, they experience what amounts to a threat to their masculine self-concept and self-efficacy. Previous scholarship indicates that when men feel that their masculine identities are threatened, they may cling more closely to stereotypically male behavioral patterns (Brines, 1994; Deutsch and Saxon, 1998).

When we apply this model of identity maintenance (Burke and Stets, 2009) to information-evaluation, we see that for unskilled males this threat is mediated by gendered perceptions. When they refuse risk, they are protecting their sense of self. For unskilled male students, taking 'control' by disengaging verifies the masculine identity that they desire to maintain. While both the male and female students reject the necessity of evaluating the credibility of the information, their identity work stems from different self-concepts. Unlike the male students, the female students do not react to their own incapacity to filter online information by denigrating all content as lies, falsehoods, and fictions. Instead,

they accept it all at face value, exhibiting a kind of naïveté that is not threatening to their femininity in the same way that it would threaten the male's masculinity.

Such a gendered split comports well with social identity theory (Ethier and Deaux, 1994). Social identity theory predicts that self-efficacy deficits will provoke different reactions in males and females. How the male and female students respond to their inability to evaluate information can therefore be understood as a result of their differing reactions to the threat this inability poses to their conceptions of themselves not only as efficacious information-searchers and users of technology, but as gendered selves. These intriguing findings raise questions on the gendered aspect of disengagement. Given the limits of the study's generalizability, future inquiry could target how gender informs the development of other self-conceptions related to digital activities, as well as digital inequalities.

Information-seeking and larger inequalities

Existing theories of digital differentiation as well as purposeful information-seeking have shed considerable light on the sources and consequences of skill gaps between more- and less-skilled internet users. They fall short, however, when it comes to illuminating what happens when information-searchers employ what one could call dysfunctional folk etiologies about the genesis of online content. Among these students, the very nature of the collaborative production, ambiguous authorship, and lack of gatekeeping that characterizes sites such as *Wikipedia* (Reagle, 2010) and the web more generally (Aumer-Ryan, 2010) actually prompts unskilled information consumers to disengage from information-searching. Without intervention, unskilled, disengaged students stand little chance of advancement in their information-seeking practices. When their presuppositions about online content remain unchallenged, their information-seeking skills are unlikely to progress. When high school students do not master rudimentary information-evaluation competencies, the gap is widened between them and their better-skilled peers.

This being said, as it draws on a case study of only one high school student body, the findings should not be generalized to all American youth. As the data come primarily from disadvantaged youth, the conclusions should not be misconstrued to suggest that a majority of American youths has opted out of information-evaluation, thereby cheating themselves of this valuable source of school-related information. However, the analysis does underline the need to refocus attention on the less-wired segments of the adolescent population. These findings underscore the importance of understanding the meanings that may be ascribed to disengagement, thus pointing to several directions for future research. The nonevaluation propensity towards disengagement bears a resemblance to the 'withdrawal strategy' described by Savolainen (2008) of adults facing information overload. Additional research is needed on the consequences of this digital disengagement to appreciate its impact on academic performance and other capital-enhancing activities.

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Note

1.   All names are pseudonyms. Grammar was corrected only for clarity.

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Author biography

Laura Robinson is Assistant Professor in the Department of Sociology at Santa Clara University. She earned her PhD from UCLA, where she held a Mellon Fellowship in Latin American Studies and received a Bourse d'Accueil at the École Normale Supérieure. In addition to holding a post-doctoral fellowship on a John D and Catherine T MacArthur Foundation funded project at the USC Annenberg Center, Robinson has served as Visiting Assistant Professor at Cornell University and Visiting Scholar at Trinity College Dublin. Her research has earned awards from CITASA, AOIR, and NCA IICD. Robinson's current multi-year study examines digital and informational inequalities. Her other publications explore interaction and identity work, as well as new media in Brazil, France, and the United States. Her website is www.laurarobinson.org. Email: laura@laurarobinson.org.