

Digital Inequality

Differences in Young Adults' Use of the Internet

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This article expands understanding of the digital divide to more nuanced measures of use by examining differences in young adults' online activities. Young adults are the most highly connected age group, but that does not mean that their Internet uses are homogenous. Analyzing data about the Web uses of 270 adults from across the United States, the article explores the differences in 18- to 26-year-olds' online activities and what social factors explain the variation. Findings suggest that those with higher levels of education and of a more resource-rich background use the Web for more "capital-enhancing" activities. Detailed analyses of user attributes also reveal that online skill is an important mediating factor in the types of activities people pursue online. The authors discuss the implications of these findings for a "second-level digital divide," that is, differences among the population of young adult Internet users.

Keywords: *skill; self-perceived knowledge; Internet; Web use; online behavior; young adults; digital divide*

As Internet use has diffused to a growing portion of the American population (Fallows, 2004; National Telecommunications and Information Administration [NTIA], 2002), scholars have started calling for refined approaches to the study of the so-called digital divide (Barzilai-Nahon, 2006; Hargittai, 2002, 2003a; Mossberger, Tolbert, & Stansbury, 2003; van Dijk, 1999, 2005). These researchers, when looking at Internet use statistics, have argued that we need to move past the binary classification of users versus nonusers and explore details about people's Web uses in order to get a deeper understanding of where inequalities may lie regarding new information technologies. Such work has focused on the types of uses for which people turn to the Internet, and a smaller body of literature has explored the importance of people's abilities in using the medium. We focus on both of these refined measures of Internet use to explore where the so-called "second-level digital divide" (Hargittai, 2002) may lie across users.

Work that has looked at the relationship of various socioeconomic status (SES) variables to Internet use has found that some differences among population segments

are fading, in some cases considerably. Data about access statistics suggest that the gender divide has disappeared in the United States (Ono & Zavodny, 2003; Wasserman & Richmond-Abbott, 2005), yet scholars looking at more detailed measures of Internet use have noted that men and women are not equally exposed to the medium (Cooper, 2006; Cooper & Weaver, 2003; Kennedy, Wellman, & Klement, 2003; Ono & Zavodny, 2003). Men use the Web more frequently than do women and have higher levels of self-perceived Web-use skills despite similarities in actual skills (Hargittai & Shafer, 2006). Research among young people has shown gender may also play a role in media multitasking, with girls multitasking more than boys (Foehr, 2006). Others have emphasized the importance of factors such as experience with the medium (Loges & Jung, 2001) and the importance of one's social surroundings (Hargittai, 2003b) in explaining how people have incorporated the Internet into their everyday lives.

We take these observations about differential online experiences seriously and empirically examine how Internet users differ in their online activities. We look at the implications different online activities may have for the medium's implications for people's life chances, that is, people's ability to improve their human, financial, political, social, and cultural capital. In particular, we examine the online behavior of the age group that is the most connected: young adults (Fox, 2004). Because this population segment has the largest level of diffusion, considering refined measures of use differences is of particular importance with this group of people given that simple measures of access may wrongly suggest that inequalities have all but disappeared.

To establish our premise that the study of young adults is a particularly relevant when it comes to refined measures of Internet use, we start by reviewing the literature on the relationship of age to Internet uses. We then review the existing literature on studies of skill as we consider that to be an especially important area for refined measures of online behavior. Next, we briefly discuss the types of activities for which people go online and do so by paying attention to differences across varying segments of the population. We then describe our data and method of analysis, followed by a discussion of our findings. We conclude by exploring the implications of our findings for which segments of the young adult Internet population are best poised to benefit from their Web use.

Age and Internet Use

According to the most recent figures from the Current Population Survey's Computer and Internet Use Supplement (NTIA, 2004), the most connected age group among Internet users is the segment of those between 18 and 24 who are in school, with 86.7% online in 2003. Past reports of the Pew Internet and American Life Project, a premier authority about Americans' Internet uses based on their regular nationwide surveys, have shown growth in the percentage of young people

between 18 and 29 who go online. In 2004, they reported that 77% of people in that age group went online; in 2006, they reported that 88% of that same group were going online, percentages higher than for any other age group (Fox, 2004; Madden, 2006). These figures suggest that predictions about generational differences are on target regarding the diffusion of basic Internet use. Young adults are much more likely than their older counterparts to be online. By limiting our focus to this segment of the population, we concentrate on the age group that is the most connected among all Americans.

Age is associated with variations in Web access and Web use. Young adults lead the age groups with their use of communication tools, such as instant messaging and chatting, and they are also more likely to pursue hobby or entertainment activities, such as downloading music or surfing for fun (Fox & Madden, 2005; Madden, 2003). They also use the medium for getting information about leisure time activities more than others (Howard, Rainie, & Jones, 2001). It is noteworthy, however, that those who are between 29 and 59 tend to use the Internet more than the younger people to perform job research and to use government sites (Fox & Madden, 2005). Research on health information seeking has shown that individuals who seek health materials online are likely to be younger than those who report seeking health information only offline (Cotten & Gupta, 2004). This body of literature suggests that there are differences among age groups in what they do online; however, we cannot conclude from these studies that there is homogeneity in Internet use within age groups.

Many have speculated about the implications of information technology for youth. Jenkins (2004) identified the two most prevalent conflicting myths as "The Myth of the Columbine Generation" and the "Myth of the Digital Generation." Although the former exaggerates the risks of going online, the latter exaggerates the benefits. More research seems to focus on the "Myth of the Digital Generation," envisioning children using the Internet for homework, educational information seeking, and connecting with friends (Livingstone & Bober, 2004). Of those 9- to 19-year-olds who use the Internet on a daily basis, 90% use it for school, 72% use it for e-mail, 70% use it for gaming, and 26% use it to read the news. These figures suggest that although some activities are widespread among all young users, others are restricted to just a portion of them. Overall, researchers in this area have advocated that studies go beyond a focus on access to exploring in detail the nature and quality of use as well as the relevant social conditions (Livingstone, 2003).

Importance of Skill

Some scholars have suggested that access and ability are two disparate issues within the digital divide (DiMaggio, Hargittai, Celeste, & Shafer, 2004; Hargittai, 2003a; Latimer, 2001; Mossberger et al., 2003; Stanley, 2003; van Dijk, 1999;

Warschauer, 2003), a difference some have referred to as the “second-level digital divide” (Hargittai, 2002). Research has endeavored to create new ways to measure both computer literacy and online fluency together in order to more fully assess information seeking and disseminating skills (Bunz, 2004). A few studies have started to empirically examine the ways in which ability, or lack thereof, intensifies basic differences in the extent to which people across different segments of the population are able to benefit from use of the medium (Freese, Rivas, & Hargittai, 2006; Hargittai, 2003a; Mossberger et al., 2003; van Dijk, 2005). Some studies have also looked at how specific professions value certain technological skills (Lowrey & Becker, 2001; Russial & Wanta, 1998), but there has been little work on the online abilities of the average user. We focus on differences in general digital literacy, arguing that the way in which people utilize the Internet is at least in part driven by their online skills.

Differences in skill may also increase the “knowledge gap.” Although the original knowledge gap hypothesis attributed variation in information acquisition to the SES of population segments (Tichenor, Donohue, & Olien, 1970), scholars have since offered other possible explanations for the knowledge gap. Many of the alternative explanations for the knowledge gap are related to or contingent on SES characteristics. Motivation (Ettema & Kline, 1977; Viswanath, Kahn, Finnegan, Hertog, & Potter, 1993), education level (Brantgarde, 1983; Wanta & Elliott, 1995) and media use (Gaziano, 1983; Griffin, 1990; Kleinnijenhuis, 1991) are three such causal factors that may influence the knowledge gap. A person’s ability to search online could also influence the kind of material he or she finds on the Web and thus influence the knowledge gap (Bonfadelli, 2002). Van Dijk (1997, 1999, 2005) similarly predicted that a “usage gap” would materialize between those who use digital technology for work and education and those who use it largely for entertainment.

In the same vein as the knowledge gap hypothesis, research found the Sesame Street effect for television use (Cook et al., 1975). Children from more privileged backgrounds were shown to be more likely viewers of educational programming. In terms of Internet and computer use, this would suggest that young people who are already advantaged gain more from the new technology and thus increase the gap between the haves and have-nots. Thus, even when access to home computers is equal, children who come from a higher SES background experience greater educational gains than do children from lower SES backgrounds (Attewell & Battle, 1999; Livingstone & Helsper, 2007). Although some work has explored this relationship for children, little related research has focused on young adults.

Young people usually consider themselves more skilled at using the Internet than their parents (Livingstone, 2001). However, a study comparing the information-seeking abilities of teens and adults found that teens completed assigned navigating tasks 55% of the time, whereas adults completed the tasks 66% of the time (Nielsen, 2005). Teens are likely to have less patience and poor research skills. Moreover, children between the ages of 9 to 19 lack skills in evaluating material they find

online (Livingstone, 2003). They also know little about searching or search engines. Although some teens may be able to serve as the “experts” for Internet use in their households or social circles (Kiesler, Zdaniuk, Lundmark, & Kraut, 2000), children are often inhibited by their lack of social support in Internet use.

Ultimately, there are several ways in which skills can affect Web use, which in turn can affect how the user may be able to benefit from the medium. This discrepancy in beneficial payoffs may exacerbate digital inequality (DiMaggio et al., 2004). This article examines how measures of online skill relate to the Web uses of young adults.

Refined Studies of Internet Use

Some researchers have moved the literature on Web use forward by considering details about people’s Internet uses when charting differences among them. Some have suggested more in-depth ways of studying the digital divide to include differences in equipment, autonomy of use, social support, skill, and the purposes for which one is using the Internet (DiMaggio et al., 2004; Hassani, 2006). Another approach to refined studies of differences in online behavior led to the creation of the Internet Connectedness Index (Jung, Qiu, & Kim, 2001), which measures the long-term inequalities of Web users, largely based on whether their Web use will increase their chances for upward mobility or increase certain types of capital. For example, if the Web is used as a toy rather than as a tool, it may not enhance the user’s career (Jung et al., 2001), although some have argued that recreational uses can yield beneficial outcomes as well (Sandvig, 2001).

One particular aspect of Internet use that has been explored by several scholars recently concerns what we may call “autonomy of use,” that is, freedom to use the technology when and where one wants without constraint from others such as lines of library patrons or employer supervision. In many cases, home access can be considered the most autonomous, especially when coupled with high-speed Internet connection that allows quick access of Web sites, many of which increasingly rely on resource-intensive presentations such as animated graphics or video. Livingstone and Helsper (2007) found that children in the United Kingdom who have access to the Internet at home have been users for more years and tend to spend more time online on a weekly basis than do those who do not have home access. Looking at the access locations of Americans, Hassani (2006) found that people who have more locations at which they can access the Internet tend to engage in activities from which they may benefit more than those with fewer access points.

Like Hassani, following the lead of DiMaggio and Hargittai (2002), we focus on “capital-enhancing” uses of the Web to explore who is more likely to engage in uses that may enhance one’s life chances. By such uses we refer to activities that may lead to more informed political participation (seeking political or government information online), help with one’s career advancement (exploring career or job opportunities on

the Web), or consulting information about financial and health services. We argue, similarly to DiMaggio and Hargittai (2002), that engaging in capital-enhancing activities is more likely to offer users opportunities for upward mobility than certain other types of online activities (e.g., checking sports scores, reading jokes) and thus is of particular concern to our explorations of digital inequality.

Previous research has found that Internet use is associated with heightened, rather than diminished, social capital for users (Best & Krueger, 2006; Katz & Rice, 2002), knowledge of current events (Tewksbury, Weaver, & Maddex, 2001), and civic engagement (Wellman, Haase, Witte, & Hampton, 2002). But these studies do not compare differences among users; rather, they consider the possible beneficial outcome of online activities between users and nonusers. We know less about the extent to which some Internet users may benefit from use of the medium more than others depending on the particular ways in which they embrace the medium.

Refined data about average users' online behavior show that although some activities are nearly universal (e.g., sending or receiving e-mail is nearly universal), most activities are less widespread across all users (Madden, 2003). For example, more people go online to get news than to look for health information (Madden, 2003). We seek to establish even more refined measures of how people use the Internet in order to understand the intricate ways in which inequality becomes manifest in Web use. More specifically, there are differences along demographic lines in how people use the Internet, and there are also disparities in use according to people's experiences with using the medium measured both by number of years online and amount of time spent using the Web on a daily basis.

Research has found that education is a strong predictor of what types of online activities a person will pursue. Sending e-mail, searching for financial, political, or government information, and banking online are all associated with higher education (Howard et al., 2001). Those with a higher education and a higher household income are less likely than those with less education and income to use instant messaging or download music, but they are more likely to seek news and product information or arrange for travel online and to use the Internet for work (Madden, 2003). Users who have more connection points through which to access the Internet—more autonomy of use—are more likely to use the Internet for beneficial purposes, including seeking health information, researching products, purchasing products, and banking online (Hassani, 2006). Users who have a lower income are more likely to use the Internet for gambling (Spooner & Rainie, 2000).

Growth in basic user statistics does not necessarily mean that everybody is taking advantage of the medium in similar ways. Here, we explore how young adults utilize the Internet, which may have an impact on their life chances and social participation. More specifically, we distinguish among the different types of activities people do online, arguing that recreational Internet usage may not have the same capital-enhancing effects as certain other types of use. A specific type of Web use that can potentially influence a user's upward mobility is online job hunting. People

who look for jobs online tend to be young adults and more highly educated, to be male (Boyce & Rainie, 2002), to be unemployed (Anderson, 2004), to have a higher household income (Madden, 2003), and to have more computer skills (Anderson, 2004).

Another way to examine which people conduct which types of activities online is to explore user typologies. Scholars have discovered differences among veterans and newcomers online (Horrigan, 2002; Howard et al., 2001). Veterans are defined as people who have been online for at least 3 years, whereas newcomers started using the Internet in the past year. Veterans are more likely to have managed their finances online and to have used the Internet in relation to work (Howard et al., 2001). They are also more likely to be from higher SES groups. Those who have been online longer and who do more online are also more likely to seek health information online (Rice, 2006).

A more specific type of veteran is the “netizen,” who, in addition to being online for 3 years, goes online from home every day (Howard et al., 2001). Of netizens, 33% are between 18 and 29, whereas only 5% are 65 or older. Netizens, in comparison to less avid users, engage in more capital-enhancing activities online than do “utilitarians,” “experimenters,” or “newcomers.” They are more likely to trade stocks online, do banking, get news, or do research or training for jobs. Newcomers, who are drawn to the Internet by the allure of fun activities, are relatively unwilling to use the Internet for financial transactions. The activities of the various groups suggest that those with the longest and most frequent use of the Internet are most likely to engage in activities from which they may benefit. Although length of experience and frequency of at-home logging on are said to be the most useful predictors of which activities people do online (Howard et al., 2001), the level of skill may also prove to be a significant predictor. It is this particular relationship of online abilities and types of uses that we aim to test in this article.

Hypotheses

The preceding literature review leads us to consider the following hypotheses regarding young adult Internet users’ online skill and types of Web uses. It is important to remember that because we focus on Internet users only, we have already restricted our sample to households with higher levels of SES, a traditional predictor of basic Internet use (NTIA, 2004).

Hypotheses Regarding Skill

Hypothesis 1a: People with higher levels of education will exhibit higher levels of digital literacy.

Hypothesis 1b: Those with more autonomy in using the medium will exhibit higher levels of self-reported skill.

Hypothesis 1c: People with more experience using the Internet will have higher self-reported online skills.

Hypothesis 1d: Users who have high-speed connections will have better self-reported skills.

Hypotheses Regarding Visits to Capital-Enhancing Web Sites

Hypothesis 2a: Education will exhibit a positive relationship with the number of capital-enhancing sites a user visits.

Hypothesis 2b: Autonomy of use will be positively associated with visits to capital-enhancing Web sites.

Hypothesis 2c: Experience will show a positive relationship with users' likelihood of viewing capital-enhancing sites.

Hypothesis 2d: The availability of a high-speed connection will be positively associated with the number of capital-enhancing sites visited by the user.

Hypothesis 2e: Those with higher levels of self-reported skills will have visited more capital-enhancing Web sites than those with lower levels of self-reported skills.

Method

Design and Procedure

A telephone survey was conducted by the national survey firm Schulman, Ronca and Bucuvalas, Inc. using a sample of listed households of 18- to 26-year-olds supplied by the company Experian compiled from more than 3,200 original public and private sources including white pages and census information. Each household was screened to determine the number of adult Internet users between the ages of 18 and 26, and the nearest birthday sampling method was used to randomly select among eligible household members. The survey was conducted using computer-assisted telephone interviewing to reduce interview length and minimize recording errors. The study was administered between August 24 and September 6, 2004, yielding 270 completed interviews. The response rate was 21% (based on American Association of Public Opinion Research [AAPOR] RR3 calculations; see AAPOR, 2008, p. 33). The relatively low response rate limits the extent to which we can draw generalizable conclusions from the sample; nonetheless, given how unique it is to administer such questions to a national sample, the study offers new insights heretofore unexplored on such a population.

Sample

Table 1 presents descriptive statistics about the sociodemographic variables in the sample. In the second set of columns in Table 1, we present comparison figures from the nationally representative sample of the Current Population Survey's Computer and Internet Use Supplement conducted in October 2003. These are the figures most

Table 1
Background of Study Participants

	Study Sample 2004			Current Population Survey 2003		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Age (18 to 26)	21.80	2.56	270	21.97	2.60	15,400
Gender (1 = <i>female</i> , 0 = <i>male</i>)	0.36	0.48	270	0.51	0.50	15,400
African American	0.06	0.24	270	0.11	0.31	15,400
Hispanic	0.09	0.29	267	0.16	0.37	15,400
Did not graduate from high school	0.13	0.34	268	0.16	0.37	15,400
High school, no college	0.21	0.40	268	0.33	0.47	15,400
Some college, no degree	0.42	0.49	268	0.37	0.48	15,400
College degree	0.24	0.43	268	0.12	0.32	15,400
Household income (logged)	10.73	0.80	208	10.43	1.00	12,896

Note: Unless otherwise indicated in parentheses after the name of the variable, values are 0 to 1, where the variable is coded 1 if the variable's title is in the affirmative (e.g., "high school, no degree"; 1 = *yes*, 0 = *no*). Current population survey results include only the same age group as this study's sample: 18- to 26-year-old young adults.

comparable in timing available from the Bureau of Labor Statistics on Internet users. A comparison of the two samples shows that our sample is similar to the national sample of Internet users. Although Internet users in our sample are more highly educated, on average, than users from the large comparison data set, this may be because of the time difference between the two surveys. If anything, this characteristic of our data is likely going to make our findings conservative with respect to any possible concerns raised by having lower levels of education as an Internet user. Nonetheless, given that we also have considerably fewer women in our sample than is representative of national Internet usage statistics, we have to take care in the extent to which we make generalizations based on our findings.

Although it is a relatively small sample, this data set is especially well suited to testing the proposed hypotheses. Unlike many existing sources, these data include detailed information about digital literacy, a measure rarely considered in other studies (perhaps precisely because of a lack of data in this domain). Moreover, the fact that the survey was administered to a national sample of U.S. adults makes it distinctive compared to many studies that often rely on less generalizable samples of users or even smaller samples than our own (e.g., Jung et al., 2001; Kerawalla & Crook, 2002; Loges & Jung, 2001; Wellman et al., 2002). Although the sample cannot be said to be representative of American adults generally speaking, and so we must be cautious about generalizing too widely from our findings, the unique availability of data about the digital literacy of young adults makes it a sufficiently distinctive resource that its use for research is warranted even though future studies will want to expand the special measures to more representative and thus more generalizable samples.

Table 2
Descriptive Statistics of Web Use Variables Used in the
Analyses as Independent Variables

	Project Participants		
	<i>M</i>	<i>SD</i>	<i>n</i>
Free to use computer at work for nonwork	0.40	0.49	270
Uses Internet at home	0.80	0.40	270
Web user for more than 3 years	0.86	0.34	270
Goes online less often than daily	0.25	0.43	270
Has high-speed access	0.80	0.40	261

Note: Answer options are coded as follows: 0 = *no*, 1 = *yes*.

Measures: Independent Variables

As noted in the hypotheses above, we are interested in the predictive power of users' education, autonomy of use, online experiences, and quality of equipment on their online abilities. We control for some demographic characteristics in the models, namely, age and gender. We use degree completed for level of education, where having a college degree serves as the base in the models. We exclude information about income because of a large number of missing values on this variable (23% of respondents did not report this information). Also, we argue that, on the aggregate, income information for this group is likely less reliable than that for other populations. The majority (59.3%) of our respondents lived with their parents, whose income they may not have been able to accurately report. An additional 10% lived with roommates, also complicating the utility of this measure.

We examine the importance of whether people use the medium at home, arguably the location offering the most autonomy for use. We also look at whether respondents have freedom in using a computer for Internet access at work. This variable takes into account whether people have a job and have access to a network-connected computer there in the first place. Only people who are in this situation and claim to be "somewhat" or "very" free in using their work computer for online activities got a value of 1 on this binary variable (others were assigned a 0). We measure users' experiences with the medium in two ways: (a) veteran status (Has the respondent been an Internet user for over 3 years?) and (b) daily online access (as compared to less frequent uses), to account for the frequency with which the respondent uses the Internet. Table 2 presents descriptive statistics for these variables. We include a dummy variable to signal whether the user has access to a high-speed connection.

Table 3
Descriptive Statistics of Web Use Variables Used in
the Analyses as Dependent Variables

	<i>M</i>	<i>SD</i>	<i>n</i>
JPEG (1 to 5)	3.2	1.6	263
Frames (1 to 5)	2.6	1.6	264
Preference Settings (1 to 5)	3.7	1.4	265
Newsgroups (1 to 5)	2.8	1.4	268
PDF (1 to 5)	3.1	1.6	267
Knowledge item score (5 to 25)	15.2	5.9	260
Sum of capital enhancing sites visited (0 to 7)	3.9	2.0	270

Note: Minimum and maximum values are in parentheses.

Measures: Dependent Variables

Of interest here are the online skills of Internet users and the types of Web sites they visit. We measure the former by aggregating responses to five questions about participants' knowledge of Internet-related terms. Previous research has shown that these measures are better proxies for users' actual skill than users' self-perceived abilities (Hargittai, 2005). The five self-rated knowledge items asked respondents to indicate on a 5-point Likert-type scale their understanding of the following terms: *jpg*, *frames*, *preference settings*, *newsgroups*, *pdf*. These variables were derived from a study that compared measures of actual skill to survey measures of skill and found a high correlation with the above items (Hargittai, 2005). The resulting index variable in our study ranges from 5 to 25, and its Cronbach's alpha is .84. We refer to this construct as "self-reported skill" and "skill" in this article to be consistent with literature on the topic, while recognizing that it is a measure of self-reported knowledge.

For types of uses, we look at users' tendency to visit Web sites—measured as a visit in the past month—about national and international news, the presidential elections, health and financial information, government services, and product information. This results in an index variable that takes on values from 0 to 7. Table 3 presents the descriptive statistics for these items.

Method of Analysis

We use ordinary least squares (OLS) regression as the method for analyzing the data. Because both of our outcome variables are interval level, this method is most appropriate. We checked the correlations among the independent variables, and none of them were prohibitively high, so they may be included in the analyses simultaneously (see Tables 4 and 5). We also performed other diagnostics to make sure our data meet the requirements of OLS regression analysis.

Table 4
Correlation Coefficients for Sociodemographic
Variables Used in the Analyses

	1	2	3	4	5	6
1. Age						
2. Female	.0295					
3. Less than high school	-.2881****	.0024				
4. High school	-.2772****	-.0521	-.2002****			
5. Some college	.0133	-.0233	-.3363****	-.4339****		
6. College	.4776****	.0744	-.2206****	-.2846****	-.4782****	

* $p < .1$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

Results

Explaining Differences in Self-Perceived Knowledge

As noted earlier, there is little previous work exploring predictors of average users' online skills. The first analysis we explore is to see what explains differences in people's ability to understand Internet-related terms, our measure of their online abilities. We present the results of two models in Table 6. First, we look at the relationship of the demographic variables to self-reported skill without the inclusion of other variables in the model. The results suggest that women are considerably more likely to report lower levels of understanding about Internet-related terms. We also find that respondents with less than a high school education, or only a high school education, or some college education are statistically significantly less knowledgeable about the Internet than those with a college degree. This is evidence of Hypothesis 1a, according to which a higher level of education is associated with higher-level self-reported skills.

Next, we add information about the details of people's Web use and experience to the model. Gender continues to show a statistically significant relationship to understanding Internet-related terms, although the magnitude of the association has decreased. Testing Hypothesis 1b, about the importance of autonomy to people's familiarity with Web-use terms, we find that those with access to a network-connected computer at work who are free to use the machine for surfing the Web report higher levels of knowledge about Internet-related terms than do those who do not have this type of work access. Also, those who use the Internet at home are more likely to be knowledgeable about the medium than those who report no home usage. Regarding Hypothesis 1c, about the relationship of experience to skill, the results suggest that those who have been users for fewer years and those who spend little time online—people who go online less than once daily—are less knowledgeable about the Web than more frequent users. The implication of this finding is that having more

Table 5
Correlation Coefficients for Web Use Variables Used in the Analyses

	1	2	3	4	5	6	7	8	9	10	11	12
1. Web user for more than 3 years												
2. Web rate	-.1658**											
3. Autonomy at work	.0835	-.1254**										
4. Use at home	.1508**	-.3072*****	-.0454									
5. High speed	.0676	-.1511**	.1445**	-.1627***								
6. Cap sites	.2050*****	-.3110*****	.1974***	.1572***	.1503**							
7. JPEG	.2079*****	-.3829*****	.2032*****	.2020*****	.0891	.3610*****						
8. Frames	.0783	-.2730*****	.0777	.0857	.0749	.2716*****	.2927*****					
9. Preference settings	.2148*****	-.2977*****	.0433	.2806*****	.0424	.3828*****	.5605*****	.4632*****				
10. News/groups	.0930	-.2455*****	.1534**	.1254**	.1233**	.2906*****	.3985*****	.4316*****	.4784*****			
11. PDF	.1893***	-.4169*****	.1933***	.1486**	.1073*	.3850*****	.6010*****	.5659*****	.4962*****	.4774*****		
12. Sum skills	.2061*****	-.4317*****	.1710***	.2201*****	.1221*	.4462*****	.8169*****	.7903*****	.7679*****	.6979*****	.8173*****	

* $p < .1$. ** $p < .05$. *** $p < .01$. **** $p < .001$. ***** $p < .001$.

time to spend online likely allows people to familiarize themselves with an increasing number of features of the medium. We have to reject Hypothesis 1d, as the results do not show a statistically significant relationship between the quality of Internet access and self-reported skill.

Once we introduce information about the details of people's Internet uses into the model, we no longer find a statistically significant relationship between a user's level of education and his or her self-reported online abilities. This suggests that examining the relationship between self-perceived Internet know-how and education is important to do in the context of additional variables concerning a user's Internet experience.

Explaining Different Levels of Capital-Enhancing Online Behavior

As we discussed above, there are numerous ways in which users may take advantage of their Internet access. We have argued, following the work of others (DiMaggio et al., 2004), that not all online activities are equally important to enhancing one's human, financial, and social capital. If the Internet is to serve as a life-enhancing medium, we must examine in detail the purposes to which users put it. Here, we analyze data about our sample to explore which factors explain different levels of capital-enhancing online activities among young adult Internet users across the United States.

Table 7 presents the findings from OLS regression analyses on the number of capital-enhancing activities in which users engage. Again, we run two models, first looking at the relationship of demographic variables to types of uses on their own. We find evidence for Hypothesis 2a, given that the data display a strong relationship between level of education and types of Web uses. The less education a user has, the less likely he or she is to look at capital-enhancing sites. This finding suggests that social inequalities may be perpetuated online, given that those who are already in more privileged positions are more likely to use the medium for activities from which they may benefit.

In the full model, the association of education and visits to capital-enhancing sites remains strong, although it is weakened somewhat, suggesting, again, mediating effects of the other variables. We find some support for Hypothesis 2b as autonomy of use (measured as freedom to use one's work computer for Internet surfing) displays a statistically significant relationship with number of capital-enhancing Web sites visited at the $p = .1$ level. However, Hypothesis 2c is not supported as being a veteran, or a rare user does not relate to such site visits. We also do not find any effect of a high-speed connection, rejecting Hypothesis 2d as well.

An innovative component of this study is to use self-reported skill as a predictor of types of uses to which people put their Internet access. We argue that it is incorrect to assume that the types of sites people visit are simply a reflection of the types of sites they *prefer* to visit. Rather, we contend that online behavior is at least in part a

Table 6
Ordinary Least Squares Regression Predicting Knowledge Level of Internet-Related Terms or “Self-Reported Skill”

Variable	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Age	-0.149	0.167	-0.036	0.156
Female (= 1)	-2.637***	0.741	-2.151**	0.680
Less than high school	-5.238**	1.415	-1.803	1.351
High school	-2.936**	1.206	-0.894	1.120
Some college	-1.939*	0.963	-1.032	0.881
Autonomy with computer at work			1.504*	0.681
Use at home			1.895***	0.891
Veteran user (more than 3 years)			2.410	1.020
Rare user (less than once per day)			-4.282****	0.828
High-speed connection			1.106	0.848
Intercept	21.495	4.084	13.650****	4.012
<i>n</i>	258		249	
<i>R</i> ²	.10		.28	
Adjusted <i>R</i> ²	.08		.25	

p* < .1. *p* < .05. ****p* < .01. *****p* < .001.

reflection of people’s online abilities. To test this hypothesis, we included information about people’s self-reported Web-use skills in the model predicting capital-enhancing site visits. This variable exhibits the strongest statistical significance with our outcome measure. Those who report higher levels of knowledge about Internet-related terms are considerably more likely to visit capital-enhancing Web sites than their less knowledgeable counterparts. Our innovation to gather data about self-reported skill and to include information about it in the model has proved significant.

Discussion

Initial studies of the digital divide have solely explored differences in access statistics. This was a legitimate focus of inquiry in the early stages of the Internet’s diffusion given that differences were considerable across various segments of the population and the medium was not yet evolved enough to offer numerous types of uses. As more and more people have gone online and as the Internet has become a source of an increasing number of activities, it is important that we include more nuanced measures of use in our studies of online inequalities.

In this study, our aim has been to focus on two as-of-yet mostly neglected refined measures of use: skill and visits to capital-enhancing Web sites. Although other researchers have considered some of these variables, they have rarely done so using data from a national sample of users. Given the relatively low response rate and small

Table 7
Ordinary Least Squares Regression Predicting
Number of Capital-Enhancing Online Activities

Variable	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Age	-0.024	0.056	0.009	0.054
Female (= 1)	-0.275	0.248	0.003	0.240
Less than high school	-2.039****	0.463	-1.009**	0.468
High school	-1.328***	0.409	-0.856**	0.387
Some college	-0.820**	0.327	-0.448	0.305
Autonomy with computer at work			0.395*	0.238
Use at home			0.231	0.311
Veteran user (over 3 years)			0.069	0.356
Rare user (less than once/day)			-0.320	0.302
High-speed connection			0.356	0.294
Self-reported skill (knowledge-item score)			0.119****	0.022
Intercept	5.393	1.365	1.782	1.418
<i>n</i>	268		249	
<i>R</i> ²	.09		.27	
Adjusted <i>R</i> ²	.08		.24	

p* < .1. *p* < .05. ****p* < .01. *****p* < .001.

sample, we have to be cautious about generalizing too far from our sample. Nonetheless, given the unique nature of the data set for a national sample, this study is an important first step in recognizing some relationships between Internet users' background characteristics and their self-reported Internet skills and usage. In particular, for this sample of 18- to 26-year-old American adults, we have shown that women are less likely to claim knowledge about online terminology and features, and those who use the Web infrequently also report lower levels of know-how about it. Interestingly, we also found that educational background does not display a statistically significant relationship with self-reported online skill once we control for details about respondents' uses, such as their autonomy and experience with the medium.

An especially novel contribution of our project is that we have been able to use data on users' self-reported Web-use skill as an independent variable to examine its relationship to people's online activities. We have found that educational background influences people's likelihood to visit capital-enhancing sites. We have also found that those with higher levels of self-reported skill are more likely to visit the types of Web sites that may contribute to improving their life chances and from which their human and financial capital may benefit. Future studies should extend data collection to larger, more representative samples to test whether our results hold for more generalizable populations.

Overall, our findings suggest that information about access and use statistics are not refined enough measures to explore all the ways in which differentiated Internet use may contribute to social inequality. Insofar as Internet use can enhance people's

life chances, it is the types of activities for which people use the medium that will be most important in examining potential divides. By focusing on the amount of capital-enhancing online activities in which people engage and uncovering the background characteristics that predict these differences, we have contributed to a more in-depth understanding of the possible sources of digital inequality among populations whose members are, for the most part, already on the “right” side of the digital divide. Of course, lacking longitudinal data, we cannot make causal arguments. Nonetheless, our findings suggest that simply being connected will not necessarily solve all potential sources of inequality, and so studies of more nuanced uses of the Web are important as Internet use spreads to an increasing portion of the population. Moreover, because we find that self-reported skill is an important predictor of whether people use the medium for capital-enhancing activities, a focus on training that augments people’s self-confidence and knowledge about the Internet must be a component of initiatives that strive to encourage the diffusion of the medium’s use across different population segments.

Note

1. The authors thank the reviewers and editor for comments from which the article greatly benefited. The authors are also indebted to Paul DiMaggio, Edward Freeland, and Peter Miller for their helpful input. Support from the Markle Foundation is kindly acknowledged.

References

- American Association of Public Opinion Research. (2008). *Standard definitions: Final dispositions of case codes and outcome rates for surveys*. Lenexa, KS: Author.
- Anderson, B. (2004). *Everyday research in the knowledge society: Who uses ICTs to find job and health information*. Essex, UK: University of Essex.
- Attewell, P., & Battle, J. (1999). Home computers and school performance. *Information Society, 15*(1), 1-10.
- Barzilai-Nahon, K. (2006). Gaps and bits: Conceptualizing measurements for digital divides. *Information Society, 22*(5), 269-278.
- Best, S. J., & Krueger, B. S. (2006). Online interactions and social capital: Distinguishing between new and existing ties. *Social Science Computer Review, 24*(4), 395-410.
- Bonfadelli, H. (2002). The Internet and knowledge gaps: A theoretical and empirical investigation. *European Journal of Communication, 17*(1), 65-84.
- Boyce, A., & Rainie, L. (2002). *Online job hunting*. Washington, DC: Pew Internet and American Life Project.
- Brantgarde, L. (1983). The information gap and municipal politics in Sweden. *Communication Research, 10*, 357-373.
- Bunz, U. (2004). The Computer-Email-Web (CEW) Fluency Scale—development and validation. *International Journal of Human-Computer Interaction, 17*(4), 479-506.
- Cook, T. D., Appleton, H., Conner, R. F., Shaffer, A., Tamkin, G., & Weber, S. J. (1975). *“Sesame Street” revisited*. New York: Russell Sage.
- Cooper, J. (2006). The digital divide: The special case of gender. *Journal of Computer Assisted Learning, 22*(5), 320-334.

- Cooper, J., & Weaver, K. (2003). *Gender and computers*. Mahwah, NJ: Lawrence Erlbaum.
- Cotten, S. R., & Gupta, S. S. (2004). Characteristics of online and offline health information seekers and factors that discriminate between them. *Social Science & Medicine*, 59(9), 1795-1806.
- DiMaggio, P., & Hargittai, E. (2002, August). *The new digital inequality: Social stratification among Internet users*. Paper presented at the American Sociological Association annual meetings, Chicago.
- DiMaggio, P., Hargittai, E., Celeste, C., & Shafer, S. (2004). Digital inequality: From unequal access to differentiated use. In K. Neckerman (Ed.), *Social inequality* (pp. 355-400). New York: Russell Sage.
- Ettema, J. S., & Kline, F. G. (1977). Deficits, differences, and ceilings: Contingent conditions for understanding the knowledge gap. *Communication Research*, 4, 179-202.
- Fallows, D. (2004). *The Internet and daily life* (No. 131). Washington, DC: Pew Internet and American Life Project.
- Foehr, U. G. (2006). *Media multitasking among American youth: Prevalence, predictors and pairings*. Menlo Park, CA: Kaiser Family Foundation.
- Fox, S. (2004). *Older Americans and the Internet*. Washington, DC: Pew Internet and American Life Project.
- Fox, S., & Madden, M. (2005). *Generations online*. Washington, DC: Pew Internet and American Life Project.
- Freese, J., Rivas, S., & Hargittai, E. (2006). Cognitive ability and Internet use among older adults. *Poetics*, 34(4-5), 236-249.
- Gaziano, C. (1983). Neighborhood newspapers, citizen groups, and public affairs knowledge gaps. *Journalism Quarterly*, 16, 556-566, 599.
- Griffin, R. J. (1990). Energy in the eighties: Education, communication and the knowledge gap. *Journalism Quarterly*, 67, 554-566.
- Hargittai, E. (2002, April). Second-level digital divide: Differences in people's online skills. *First Monday*, 7(4). Retrieved April 17, 2008, from http://firstmonday.org/issues/issue7_4/hargittai/index.html
- Hargittai, E. (2003a). *How wide a Web? Inequalities in accessing information online*. Unpublished doctoral dissertation, Princeton University, Princeton, NJ.
- Hargittai, E. (2003b). Informed Web surfing: The social context of user sophistication. In P. E. N. Howard & S. Jones (Eds.), *Society online* (pp. 257-274). Thousand Oaks, CA: Sage.
- Hargittai, E. (2005). Survey measures of Web-oriented digital literacy. *Social Science Computer Review*, 23, 371-379.
- Hargittai, E., & Shafer, S. (2006). Differences in actual and perceived online skills: The role of gender. *Social Science Quarterly*, 87(2), 432-448.
- Hassani, S. N. (2006). Locating digital divides at home, work, and everywhere else. *Poetics*, 34(4-5), 250-272.
- Horrigan, J. B. (2002). *Getting serious online*. Washington, DC: Pew Internet and American Life Project.
- Howard, P. N., Rainie, L., & Jones, S. (2001). Days and nights on the Internet: The impact of a diffusing technology. *American Behavioral Scientist*, 45(3), 383-404.
- Jenkins, H. (2004, September 3). The myths of growing up online. *Technology Review*. Retrieved April 16, 2008, from <http://www.technologyreview.com/Biotech/13773/>
- Jung, J.-Y., Qiu, J. L., & Kim, Y.-C. (2001). Internet connectedness and inequality: Beyond the "divide." *Communication Research*, 28, 507-535.
- Katz, J. E., & Rice, R. E. (2002). *Social consequences of Internet use: Access, involvement and interaction*. Cambridge, MA: MIT Press.
- Kennedy, T., Wellman, B., & Klement, D. (2003). Gendering the digital divide. *IT & Society*, 1(5), 72-96.
- Kerawalla, L., & Crook, C. (2002). Children's computer use at home and at school: Context and continuity. *British Educational Research Journal*, 28, 751-771.
- Kiesler, S., Zdaniuk, B., Lundmark, V., & Kraut, R. (2000). Troubles with the Internet: The dynamics of help at home. *Human-Computer Interaction*, 15(4), 323-351.
- Kleinmijhuis, J. (1991). Newspaper complexity and the knowledge gap. *European Journal of Communication*, 6(4), 499-522.

- Latimer, C. P. (2001). *The digital divide: Understanding and addressing the challenge*. New York: New York State Forum for Information Resource Management.
- Livingstone, S. (2001). Children on-line: Emerging uses of the Internet at home. *Journal of the IBTE*, 2, 1-7.
- Livingstone, S. (2003). Children's use of the Internet: Reflections on the emerging research agenda. *New Media & Society*, 5(2), 147-167.
- Livingstone, S., & Bober, M. (2004). *UK children go online: Surveying the experiences of young people and their parents*. London: London School of Economics and Political Science. Retrieved April 17, 2008, from <http://www.children-go-online.net>
- Livingstone, S., & Helsper, E. (2007). Gradations in digital inclusion: Children, young people, and the digital divide. *New Media & Society*, 9(4), 671-696.
- Loges, W. E., & Jung, J.-Y. (2001). Exploring the digital divide: Internet connectedness and age. *Communication Research*, 28, 536-562.
- Lowrey, W., & Becker, L. B. (2001). The impact of technological skill on job-finding success in the mass communication labor market. *Journalism and Mass Communication Quarterly*, 78(4), 754-770.
- Madden, M. (2003). *America's online pursuits*. Washington, DC: Pew Internet and American Life Project.
- Madden, M. (2006). *Internet penetration and impact*. Washington, DC: Pew Internet and American Life Project.
- Mossberger, K., Tolbert, C. J., & Stansbury, M. (2003). *Virtual inequality: Beyond the digital divide*. Washington, DC: Georgetown University Press.
- National Telecommunications and Information Administration. (2002). *A nation online: How Americans are expanding their use of the Internet*. Washington, DC: Author.
- National Telecommunications and Information Administration. (2004). *A nation online: Entering the broadband age*. Washington, DC: Author.
- Nielsen, J. (2005). *Usability of Websites for teenagers*. Fremont, CA: Nielsen Norman Group.
- Ono, H., & Zavodny, M. (2003). Gender and the Internet. *Social Science Quarterly*, 84(1), 111-121.
- Rice, R. E. (2006). Influences, usage, and outcomes of Internet health information searching: Multivariate results from the Pew Surveys. *International Journal of Medical Informatics*, 75(1), 8-28.
- Russial, J., & Wanta, W. (1998). Digital imagine skills and the hiring and training of photojournalists. *Journalism and Mass Communication Quarterly*, 75(3), 593-605.
- Sandvig, C. (2001). Unexpected outcomes in digital divide policy: What children really do in the public library. In B. M. Compaine & S. Greenstein (Eds.), *Communications policy in transition: The Internet and beyond* (pp. 265-293). Cambridge, MA: MIT Press.
- Spooner, T., & Rainie, L. (2000). *African-Americans and the Internet*. Washington, DC: Pew Internet and American Life Project.
- Stanley, L. D. (2003). Beyond access: Psychosocial barriers to computer literacy. *Information Society*, 19(5), 407-416.
- Tewksbury, D., Weaver, A. J., & Maddex, B. D. (2001). Accidentally informed: News exposure on the World Wide Web. *Journalism and Mass Communication Quarterly*, 78(3), 533-554.
- Tichenor, P. J., Donohue, G. A., & Olien, C. N. (1970). Mass media flow and differential growth in knowledge. *Public Opinion Quarterly*, 34(2), 159-170.
- van Dijk, J. A. G. M. (1997). *Universal service from the perspective of consumers and citizens*. Brussels, Belgium: Information Society Forum.
- van Dijk, J. A. G. M. (1999). *The network society: Social aspects of new media*. London: Sage.
- van Dijk, J. A. G. M. (2005). *The deepening divide*. London: Sage.
- Viswanath, K., Kahn, E., Finnegan, J. J. R., Hertog, J., & Potter, J. D. (1993). Motivation and the "knowledge gap": Effects of a campaign to reduce diet-related cancer risk. *Communication Research*, 20, 546-563.
- Wanta, W., & Elliott, W. R. (1995). Did the "magic" work? Knowledge of HIV/AIDS and the knowledge gap hypothesis. *Journalism and Mass Communication Quarterly*, 72(2), 312-321.
- Warschauer, M. (2003). *Technology and social inclusion*. Cambridge, MA: MIT Press.

Wasserman, I. M., & Richmond-Abbott, M. (2005). Gender and the Internet: Causes of variation in access, level, and scope of use. *Social Science Quarterly*, 86(1), 252-270.

Wellman, B., Haase, A. Q., Witte, J., & Hampton, K. (2002). Capitalizing on the Internet: Social contact, civic engagement, and sense of community. In B. Wellman & H. Haythornthwaite (Eds.), *The Internet in everyday life* (Vol. 45, pp. 436-455). Oxford, UK: Blackwell.

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