

Digital Media Literacy Education and Online Civic and Political Participation

JOSEPH KAHNE¹

Mills College

NAM-JIN LEE

College of Charleston

JESSICA TIMPANY FEEZELL

UC Santa Barbara

Can media literacy education promote and improve youth engagement in civic and political life? Unfortunately, to date, there have been almost no quantitative assessments of the frequency of media literacy education, nor of any possible subsequent impacts. This study draws on a unique panel data set of a diverse group of youths in high school and college settings. It finds that exposure to media literacy education is not strongly related to demographic variables. In addition, with controls for prior levels of online political activities, for political interest, and for a broad range of demographic variables, this study also finds that digital media literacy education is associated with increased online political engagement and increased exposure to diverse perspectives.

There is a stark contrast between youths' participation with new media and their civic and political participation. When judged by traditional standards, levels of civic and political commitment, capacity, and activity by youths are the lowest of all demographic groups, and until recently, have also been declining (Macedo et al., 2005). At the same time, youths are highly engaged with digital media,

¹ We are enormously grateful to the MacArthur Foundation and the Center for Information and Research on Civic Learning and Education (CIRCLE) for funding and support that enabled this work. Chris Evans and Ellen Middaugh played significant roles related to the conceptualization and implementation of this study. Paul Mihailidis, Eszter Hargittai, the editors, and the anonymous reviewers also provided very helpful feedback. Of course, despite all this help, we take full responsibility for our analysis and conclusions.

Joseph Kahne: jkahne@mills.edu

Nam-Jin Lee: leen@cofc.edu

Jessica Timpany Feezell: jtfeezell@polsci.ucsb.edu

Date submitted: 2010-11-09

such as social media, blogging, video games, and smart phones (see Kahne, Middaugh, & Evans, 2008; Lenhart et al., 2010). The youth, in fact, are frequently the generation that is closest to innovation (Krueger, 2002; Mossberger, Tolbert, & McNeal, 2008).

Engagement with new media has the potential to strengthen young people's participation in civic and political life. Educators, policymakers, foundations, and others are considering ways to develop desirable bridges between these two domains (for examples, see the National Broadband Plan [2010], the Center for Media Literacy, and the National Association for Media Literacy Education). The present study represents one of the first efforts to assess quantitatively both the frequency and distribution of digital media literacy activities in high schools and post-secondary settings, as well as whether such activities can increase the likelihood that youth will engage with digital media in ways that support civic and political participation.

The State of Youth Civic and Political Engagement

There are many signs that youths' levels of participation in civic and political life are lower than desirable. Fewer than 23% of youth aged 18–29 voted in the 2010 mid-term elections (CIRCLE, 2011). Broader indicators of civic and political engagement highlight problems as well. For example, in 2008, 55% of those aged 18–29 were judged to be "disengaged" in a report by the National Conference on Citizenship (2008; see also Zukin et al., 2006).

Not only are levels of civic and political participation low, they are alarmingly unequal. For example, young people with more education are far more likely to vote than their less-educated counterparts (CIRCLE, 2008, p. 1). Similarly, compared with those who have no college experience, those aged 25 or older who have a bachelor's degree are more likely to report working with others on a community problem (45% vs. 32%, respectively), meeting to discuss community issues (45% vs. 21%), and volunteering in the past year (72% vs. 43%) (National Conference on Citizenship, 2008). There are also disparities associated with socioeconomic status (SES). Roughly 75% of those in the top 20% of measures of SES participate in offline political activity, while the percentage drops to about 32% for those in the bottom 20%. These disparities are also apparent online. While 65% in the top quintile reported engaging in one of five online political activities, only 10% of those in the bottom quintile made the same claim (Schlozman, Verba, & Brady, 2009).²

In part, low levels of some traditional forms of civic and political engagement may reflect a shift in the priority youths place on various kinds of activities. For example, as scholars such as Lance Bennett (1998) have noted, youths grant significance to political expression and enact it in ways that differ from those of earlier generations. This movement entails a shift away from civic and political engagement that aims to influence elites and state institutions toward a range of more direct forms of lifestyle politics and

² Interestingly, the difference between those who had attended college and those who had not diminished markedly when it came to posting political material on blogs or engaging politically on social networking sites. While it was 28% for overall political activity, it was only 7% for these activities (Smith et al., 2009).

politics that emphasize self-expression and self-actualization (Bennett, 1998; Dalton, 2008; Zukin et al., 2006). As Zukin et al. (2006) detail, these shifts have roots in broad social and economic shifts that began well before the introduction of Web 2.0, but there are many ways in which expanding opportunities for participation with the digital media that Web 2.0 has ushered in have likely augmented this transformation. In particular, as Rheingold (2008), Levine (2008), and others argue, there are many ways that the public voice so many young people express online through blogs, wikis, and other means can help to forge a bridge between media production and civic engagement. The strength of that bridge, as well as the extent to which youth use it, will depend, to a significant degree, on their levels of digital media literacy.

The Civic and Political Potential of Digital Media Literacy

Media literacy can be defined as “the ability to access, analyze, evaluate, and create messages in a variety of forms” (Aufderheide & Firestone, 1993, p. 7). It describes a set of capacities related to media consumption and creation that one can acquire. *Digital media literacy* extends the traditional understanding of media literacy to include new skills that are required to navigate today’s new media environment, and it also involves creative production and instruction on how to evaluate and use information critically (Buckingham, 2003; Jenkins, 2006).

The importance of digital media literacy in relation to civic and political life can be manifold. Perhaps most fundamentally, digital media literacy is seen as a way to promote online forms of civic and political engagement. Indeed, digital media technologies are now a central component of civic and political life, especially for young people. For example, Kohut (2008) finds that 37% of those aged 18–24 received campaign information during the 2008 presidential election from social networking sites (more than did so from newspapers). Only 4% of those aged 30–39 did so in this way, and for older adults, the numbers drop still further. Similarly, 41% of those aged 18–29 went online during the campaign to watch candidate interviews, debates, speeches, or commercials (Kohut, 2008). Countless websites provide information on political and social issues. Similarly, blogs provide exposure to varied perspectives, and a growing sector of video games create simulations of civic action and political life. These games expose players to a host of social issues, such as global hunger, animal rights, the environment, immigration, and urban development (see <http://www.gamesforchange.org>). Moreover, youths need not be passive consumers in relation to issues about which they care. Digital media provide many ways for youths to voice their perspectives, share information, contact officials, create artistic statements related to civic and political issues, and mobilize others (Benkler, 2007; Jenkins, 2007; Shirky, 2008). To take full advantage of these possibilities—and to do so ethically and effectively—youths need opportunities to learn about and practice these skills (Gilbert, 2009; Rheingold, 2008).

In short, digital media literacy may expand the degree to which youths tap the affordances of the Web to engage in civic and political activities online (such as seeking out information, producing content, or engaging in dialogue on civic and political topics) that will help to offset their generally low levels of civic and political engagement by boosting their online engagement. In addition, this online engagement may also boost offline engagement. Studies show that, when youths and adults seek out information and participate in discussions online, there is an increase in their overall levels of civic acts, such as raising

money for charity or volunteering, as well as political acts, such as working on a campaign, attending a political speech, or voting (McLeod, Kosicki, & McLeod, 2009; Mossberger, Tolbert, & McNeal, 2008; Shah, McLeod, & Lee, 2009).

While many highlight the positive potential of online engagements, concerns are also raised that lead some to advocate for media literacy. For example, many scholars have expressed the concern that the ways in which online environments enable individuals to choose what they read and with whom they interact may lead those who are engaged in online discussions of societal issues to enter echo chambers, where they would primarily be exposed to, and interact with, only those who share their ideological viewpoints (Sunstein, 2001).

A rich tradition in political theory details the benefits of exposure to divergent viewpoints and the dangers of being exposed to only those with whom one agrees. Exposure to divergent views have been viewed as a means of promoting reflection, reaching a better understanding of complex issues, and developing a deeper appreciation of others' viewpoints (Arendt, 1968; Habermas, 1989; Mill, 1956). Empirical studies have also found that exposure to divergent viewpoints can enhance an individual's knowledge of actual public opinions, their tolerance, and their sense of the legitimacy of democratic outcomes (see Brundidge & Rice, 2009, for a review). Although such opportunities are less frequently framed positively, it also appears that there can be benefits associated with interactions with those who share one's views. Such experiences can promote greater civic and political participation, as well as a deeper and often more conceptually coherent understanding of one's own perspective (Jamieson & Cappella, 2008; Mutz, 2006). The value of exposure to both those who share one's views and those who do not was well detailed by John Dewey (1916). He argued that the strength of a democratic community could be assessed by the number of interests that were consciously shared, and by the level of full and free interplay with those who hold alternative perspectives. Media literacy might well further these priorities by increasing youths' abilities and desire to seek out others who do and do not share their views on varied societal issues.

The Frequency and Distribution of School-Based Media Literacy Activities

While it is common for adults to view youths as "digital natives" (Tapscott, 1997), studies have demonstrated that many youths lack media literacy skills (Hargittai, 2010). In addition, studies indicate that digital media skills are unevenly distributed, with those from privileged backgrounds demonstrating higher levels of digital knowhow than their peers of lower socioeconomic status (Hargittai, 2003, 2010; Norris, 2001). School-based media literacy activities provide a means of responding to these gaps in digital media literacy among youth.

Unfortunately, even though many states, schools, and organizations have stated a desire to increase the level of digital media literacy education in our schools (see Hobbs, 2004, for a summary of such initiatives), very little empirical research on the frequency or distribution of media literacy education has been published (David, 2009; Hobbs, 2004). As Brown and Schwarz document, "the state of critical media literacy in U.S. secondary schools is difficult to determine" (2008, p. 483). There are no nationally representative studies on which to draw. In fact, there are no large-scale surveys at all that assess the

frequency of digital media literacy education in K–12 schools. Similarly, while there is evidence (Kahne & Middaugh, 2008) that higher-socioeconomic-status, higher-achieving, and white students experience more civic learning opportunities, such as service learning and classroom discussion of controversial issues, we do not have any evidence regarding the distribution of digital civic learning opportunities or more general media literacy curricula. Indeed, we could not find a single quantitative assessment of media literacy education among high school students in the United States that measured either the frequency of media literacy education or whether it was distributed equally.

The Impact of Digital Media Literacy Curriculum

There are also very few quantitative studies on the impact of digital media literacy education on civic outcomes. In fact, there are very few empirical studies of the broader (noncivic) impact of media literacy courses (see Hobbs & Frost, 2003). In a response to this gap, Mihailidis (2009) looked at the civic learning outcomes of a course at the University of Maryland. His quasi-experimental study of 239 students found that those enrolled in a media literacy course increased their ability to comprehend, evaluate, and analyze media messages. At the same time, his findings suggest that these courses promoted negativity and cynicism about the news media, and that more could be done to promote active citizenship.

Conceptual work in this area is more common. Jenkins (2006) argues that increased digital media literacy education has the potential to close the digital media “participation gap”—the variation in engagement with digital media (Hargittai & Walejko, 2008)—among youths by providing the skills and opportunities that will enable active participation in the public sphere. Working in a related vein, Rheingold (2008) outlines ways in which participatory pedagogies can be used by educators to activate youths’ public voices via online platforms, as well as to build strong connections to civic and political issues about which they care. Other work suggests that many more traditionally conceived literacy skills, such as interpersonal skills and strategic planning, can be effectively taught through digital media because of youths’ familiarity with, and regular use of, new media (Buckingham, 2003). Buckingham, Jenkins, and many others also express the need for critical media literacy skills; youths need support to learn both how to effectively judge the credibility of what they find online, and how to identify and compare various ideological and political messages.

Research Questions

As detailed above, there is a significant need for studies that examine both the frequency and the distribution of current practices and their impact. Specifically, this study aims to address four questions:

RQ1: How frequently do youths experience digital media activities in school contexts?

RQ2: How equitable is exposure to digital media activities?

RQ3: Do digital media literacy activities foster online political participation?

RQ4: Do digital media literacy activities promote exposure to diverse viewpoints?

Methods

Data

Our exploration of these questions draws on two sets of panel data. The first panel (henceforth, high-school panel) was performed with 1,203 California high school juniors in 2006 (T1) by conducting surveys with entire high school classrooms. The following year, in 2007 (T2), we revisited the same schools and administered follow-up surveys to 502 students who had taken the survey the year before. This represents a panel retention rate of 41.7%. Our rate of attrition was due to students transferring from the school, students being absent on the day of the survey, and our limited time to conduct surveys in the schools (which meant that we could not survey students in every senior classroom).

Students in this panel came from seven high schools. To minimize selection bias, we surveyed entire classes of juniors during class time. The selection of these classes was based on class schedules and the availability of the computer lab where the surveys took place. We did not select classes on the basis of either students' experiences of digital media literacy activities or their exposure to new media in general. We conducted regression analysis (not reported here) and found that the demographic characteristics of both samples were statistically similar, with the exception that there were more Latinos in T1 than T2. The districts and schools were purposively selected to ensure a diverse range of demographic and academic characteristics. The percentage of students receiving a free or reduced-price lunch varied widely across schools, from 1% to 83%. In addition, the sampled schools reported average Academic Performance Index (API)³ scores ranging from the bottom 20% to the top 10% of all the high schools in California. Of those students who identified their ethnicity, 36.7% were white, 30.8% were Asian-American, 18.2% were Latino, and 7.6% were African-American.

The second panel included 435 respondents who were initially surveyed in their high school junior or senior years between 2005 and 2007, and who were then resurveyed in 2009 after the 2008 presidential election (hereafter, post-high school panel). These students came from one of 21 different schools, each located in a different district in California. The schools were purposively selected to ensure a diverse range of demographic and academic characteristics. We contacted schools and, in addition to providing data on their schools, offered them funds as compensation for the time they put into working with us on data collection.

Our selection of classes from the 21 schools followed the same procedure as in the first panel. Since all the students in a given class took the initial survey, our initial sample was, in some ways, better than a traditional phone sample, where many choose not to participate. However, only some who were surveyed while in high school (1,305 out of 5,505, or 23.7%) agreed to let us contact them again once they left high school. Using e-mail, phone numbers, and mailed surveys, we were ultimately able to contact 435 of those who gave us permission to take the T2 survey. This represents a panel retention rate of 33.3% against the baseline sample ($N = 1,305$) and 7.9% ($23.7\% \times 33.3\%$) against the total pool of

³ The API is a single-number summary of scores on several standardized tests, including in math, language arts, and science.

survey respondents ($N = 5,505$). We examined differences between the original sample and the sample of individuals who took the T2 survey in 2009 and found some differences on the basis of gender, political interest, and grade point average, but no differences in digital media participation.

This sample covers schools that enroll mostly white students (19.0%), schools that enroll predominantly students of color (42.9%), and schools that are racially mixed (38.1%). The percentages of students receiving a free or reduced-price lunch also varied widely across schools, from 0% to 92%. In addition, the sampled schools reported average API scores ranging from the bottom 10% up to the top 10% of all the high schools in California. The selection of diverse schools was reflected in the racial makeup of the high school students who participated in our survey. Of those students who identified their ethnicity, 22.0% were white, 27.2% were Asian-American, 38.5% were Latino, and 5.5% were African-American. While diverse, these sample populations are not representative of the population of the state. The panels reflect student averages for the state of California for white students (29.4%) and African-American students (7.6%) but under-represent Hispanic and Latino students (48.1%) and over-represent Asian-American students (8.1%) (Ed-Data, 2011).

While a national sample would be preferable, we have no reason to believe that *relationships* between variables would differ in the broader population after controlling for demographic variables that differ between samples. We do, however, believe that the descriptive data on the youths, the schools, and the youths' online experiences should be interpreted with caution. For example, given the centrality of the technology industry in the state, it is possible that students' levels of engagement with online environments and teachers' attention to digital media may be greater in California than in other parts of the United States. In addition, it would have been ideal to have had enough schools to be able to perform school-level analysis, but given the small number of schools involved and the fact that our follow-up samples may not be representative of the schools these students attended, we performed only individual-level analyses.

We believe that this data set is quite unique. Indeed, we know of no other panel survey of a broad and diverse sample of youths that examines the relationship between digital media literacy activities and a range of digital media practices that are likely supports for civic and political engagement.

Measurement

Three groups of variables were created from the two sets of our panel data: (a) indicators of online civic and political engagement (outcome variables), (b) measures of digital media literacy activity, and (c) demographic variables. We used some of these survey items on prior surveys. We also conducted several focus groups with high school students in 2005 to clarify how they were interpreting our items.

Indicators of Online Civic and Political Engagement

We examined two dependent variables: politically driven online participation and online exposure to diverse perspectives. Politically driven new media participation comprised three questions, gauging, on a six-point scale ranging from "never" (0) to "several times a day" (5), how often respondents (a) used

blogs or social networking sites to share or discuss perspectives on social and political issues, (b) used the Internet to get information about political or social issues, and (c) used e-mail to communicate with others who were working on a political or social issue. We averaged the three scores to construct an index of politically driven new media participation. Reliability estimates (Cronbach's α) for this measure on the pre- and post-surveys ranged from 0.72 to 0.82.

Exposure to divergent perspectives measured, on a five-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5), the degrees of agreement with the following four statements: (a) I've gotten new perspectives on societal issues because of my online activities, (b) I've had online conversations with people who have different values or political views than I do, (c) I've been able to connect with people who care about the same things that I do through the Internet, and (d) I've been able to connect with people who share my views about ways to create a better world through the Internet. Results from exploratory factor analysis clearly indicate that these items all load on one factor. As a result of online activities, few individuals are exposed only to perspectives with which they agree or disagree (for a related finding, see Gentzkow & Shapiro, 2010). Individuals tend to experience either both sets of perspectives or neither. Reliability estimates (Cronbach's α) for this measure on pre- and post-surveys ranged from 0.82 to 0.86.

Digital Media Literacy Activities

In this study, we were particularly interested in digital media literacy activities that might support online civic and political engagement. In an effort to assess the opportunities students had to develop digital media literacy, we asked four questions about classes our respondents had taken during the school year that the surveys were taken (in the high school panel), or about classes they had taken during the past 12 months (in the post-high school panel). Specifically, students were asked how often in their classes they (a) had learned how to assess the trustworthiness of online information, (b) were required to use the Internet to get information about political or social issues, (c) were required to use the Internet to find different points of view about political or social issues, and (d) were given an assignment where they had to create something to put on the Web. These items focus on broad categories of activity. They are hardly exhaustive of the range of activities designed to promote digital media literacy, and they do not enable us to drill down deeply to characterize best practices. Rather, these data provide a sense of how frequently students are required to employ some of the affordances of digital media while in school, and serve to help us consider how having these curricular experiences may influence youths' activities during their discretionary time.

All of these items were assessed during the second wave of each panel on a four-point frequency scale ranging from "never" (1) to "very often" (4). For the post-high school panel, these questions were not asked of those who were not enrolled in an educational institution. An index for digital media literacy instructions was created by averaging four scores ($\alpha = 0.75$ for the high school panel; $\alpha = 0.82$ for the post-high school panel).

Demographic, Educational, Political, and Media Use Variables

Demographic and Educational Variables

While our primary focus was on exposure to media literacy activities, we were able to include a number of variables that captured the demographic, educational, political, and media use characteristics of our sample. Since, as indicated below, prior studies have found that these variables may well be related to our dependent variables, including them in our analysis helped to isolate the effects of media literacy activities. Specifically, we included students' gender and race (Burns, Schlozman, & Verba, 2001; Marcelo, Lopez, & Kirby, 2007), their intention to enroll in college and whether it was a four-year or two-year college, and their grade point average (Lopez et al., 2006). We also included a measure of mother's education as a proxy for socioeconomic status (Verba, Schlozman, & Brady, 1995). Kayser and Summers (1973) find that, when direct measures of parental SES are not available, student reports of parental education are more valid than reports of income. These proxies are stable, and the validities of the reports are moderate (see also Looker, 1989).

Political Orientations

We also employed two variables to isolate the effects stemming from political orientation. First, we accounted for the strength of political ideology, as past research has documented a significant relationship between the strength of political ideology with various types of political activities (Verba & Nie, 1972). Both strong liberals and strong conservatives tend to be more politically active than moderates and non-ideological citizens. By contrast, the literature is less clear on the relationship between the direction of political ideology (liberal vs. conservative) and the level of civic and political engagement. Given the relationship between political ideology and political engagement, we included the "intensity" of conservative or liberal leanings, rather than the direction of such leanings. We constructed a measure of strength of political ideology by folding over a standard five-point-scale political ideology measure ranging from "very liberal" (1) to "very conservative" (5) at the mid-point and taking the absolute value. Thus, this measure ranged from "middle of the road" (0) to "very liberal or very conservative" (2). Second, we also took into account political interest. Citizens' interest in politics and public affairs has been shown to be a consistently strong predictor of civic and political engagement (Rosenstone & Hansen, 1993). Political interest was measured by a single item gauging the degree of agreement, measured on a five-point agree-disagree Likert scale, with the statement, "I am interested in political issues."

Additionally, in order to take into account influences from parents and family environments, we asked about mothers' educational attainment and how frequently (on a four-point scale ranging from "never" to "very often") youth talked with their parents about civic and political issues (see Andolina et al., 2003; Torney-Purta et al., 2001).

General Uses of New Media

One potentially confounding factor in our examination of the influence of digital media literacy activities on civic and political engagement is the possibility that the relationship might be spurious, resulting simply from the levels of general new media usage. In other words, those who are active users of new media in general might seek new media-related education and also actively engage in politically driven activities. To attend to this possibility, we included four control variables addressing diverse aspects of new media use other than politically driven online activities and online exposure to divergent perspectives.

First, we took into account the amount of time the respondents spent online as a general measure of Internet use. Time spent online was assessed only in the high school panel. Second, we included two items measuring people's use of new media for communicating and socializing with those around them (i.e., friends, family, and acquaintances). We included two items assessing how often the respondents (a) used e-mail, text messaging, or instant messaging software to communicate with friends or family, and (b) used blog, diary, or social networking sites (like MySpace) to socialize with people ("friends, family, or people you've met online"). These two items were assessed on a six-point frequency scale ranging from "never" (0) to "several times a day" (5), and were correlated modestly at $r = 0.32$. Finally, since literature has indicated that there may be a relationship between some forms of video game play and civic outcomes (Kahne, Middaugh, & Evans, 2008; Williams, 2006), we included a measure of video game play to control for the impact of this form of online activity. Gaming was measured by a single item asking, on the same six-point frequency scale, how often the respondents played games on a computer, a console, or a handheld device.

Analytic Strategy

The main objective of our data analysis was to assess the distributions and the potential impacts of digital media literacy activities. Our choice of analytic techniques reflects the availability of repeated measures for digital media literacy activities, as well as for our outcome variables. As described in the prior section, we assessed digital media literacy activities only once, in the second wave of each panel. However, we measured our outcome variables twice, in both the first and the second wave of each panel. To take full advantage of the structure of our panel data, we used a lagged dependent variable regression analysis that included prior values of the outcome variable as an independent control variable. By taking into account lagged values of our outcome variable, this kind of panel model predicts the level of a given outcome variable at time 2 while controlling for the value of that outcome at time 1. This model provides unbiased estimates of the effects of digital media literacy activities on new media engagement by adjusting any initial differences in the outcome variables that might exist between those who were already active online and those who were not (Finkel, 1995; Halaby, 2004). Although some concerns have been raised about this approach—mostly about a potential downward bias of OLS regression estimates in the presence of residual autocorrelation—recent simulation studies confirmed that, in most situations, the lagged dependent variable approach produces estimates superior to any available alternative approaches (Keele & Kelly, 2006).

One shortcoming of our survey in relation to this analytic strategy should be mentioned. Our outcome variables measure the total amount of time youth spent doing these various activities. Thus, teacher assignments that require engaging in these activities may be included in youth assessments of the time they had spent doing these activities, and this, in turn, may inflate the relationship between digital media literacy activities and various online civic and political activities.

Results

Digital Media Literacy Activities Are Common, Though Not Universal (RQ1)

We found that, at both the high school and the college levels, many youths are required to take part in digital media literacy activities (see Table 1). Between 40% and 57% of the youths in high school said they had each of the three educational opportunities associated with consumption of online civic and political information "often" or "very often." Fewer than 20% reported "never" having such opportunities. These opportunities were more common at the college level, where between 68% and 81% reported having each of these same opportunities "often" or "very often." Opportunities to create content for the Web were much less common. Only 15% of the high school youths in our survey reported having this opportunity "often" or "very often," and 66% reported "never" having this opportunity. Again, these opportunities were slightly more common for the college youths, with 22% having these opportunities "often" or "very often." While our survey is not nationally representative, it is of a broad and diverse sample. These results indicate that many youths are having these opportunities, but that the opportunities are far from universal.

Table 1. Frequency Distributions of Digital Media Activity Items.

In my classes . . .	Response Categories			
	Never	Sometimes	Often	Very Often
High school panel, % (N = 490)				
. . .we learned how to assess the trustworthiness of information we find on the Web.	18.0	41.5	27.4	13.1
. . . we were required to use the Internet to get information about political or social issues.	10.9	32.3	30.5	26.3
. . . we were required to use the Internet to find different points of view about political or social issues.	13.9	34.3	28.2	23.5
. . . we were given an assignment where we had to create something to put on the Web.	66.5	18.7	9.0	5.9
Post-high school panel, % (N = 226)				
. . .we learned how to assess the trustworthiness of information we find on the Web.	8.9	7.1	43.4	40.7
. . . we were required to use the Internet to get information about political or social issues.	13.7	11.1	38.5	36.7
. . . we were required to use the Internet to find different points of view about political or social issues.	20.8	10.6	35.8	32.7
. . . we were given an assignment where we had to create something to put on the Web.	65.0	12.8	10.6	11.5

Using lagged dependent variable models, our subsequent analysis focuses on the relationships of digital media literacy activities with two different types of online engagement (politically driven online participation and online exposure to diverse viewpoints). For each outcome variable measured in the second wave of each panel, the same outcome variable assessed in the first wave was entered as a predictor, along with digital media literacy activities and the other independent variables. We estimated this panel model using both the high school panel data and the post-high school panel data.

*Exposure to Digital Media Literacy Activities
Is Relatively Equal Among Those in School (RQ2)*

Given that digital media literacy activities may promote desired online civic and political engagement, it is important to examine how equitably these opportunities are distributed. Regression analysis of our data indicates that mothers' education levels (which we use as a proxy for socioeconomic status; see Kayser & Summers, 1973), students' race, and their intention to enroll in college do not appear to exert a sizable influence on the quantity of digital media literacy activities that students experience (see Table 2). However, we did find a gender difference in our post-high school panel. The regression analysis indicates that female college students are more likely to engage in digital media literacy activities than their male counterparts. Interestingly, students' academic performance in school, as indicated by their grade point average, was negatively related to the engagement in the digital media literacy activities in the high school panel. Such a relationship did not surface among college students. By contrast, political interest was not related to media literacy activities in high school, but it was positively (though modestly so) associated with the level of digital media literacy activities in college settings. We suspect the differences at the college level were due to students' enhanced ability to select courses that match their interests while in college (e.g., those who are interested in politics take courses where political issues are explored online). Together, these individual background factors account for only 2.6% and 6.2%, respectively, of the variation in experiencing digital media literacy activities in high school and college settings.

Table 2. Results of Regression Model Predicting Digital Media Literacy Activities.

	High School Panel		Post-High School Panel	
Background Variables				
Female	0.03		0.22**	
Mother's education	0.06		0.05	
African-American	-0.05		0.04	
Hispanic	-0.05		0.02	
Asian-American	-0.01		0.08	
GPA	-0.16**		0.01	
Aspiration for 4-yr	0.02		—	
Political interest	0.06		0.14*	
R² (%)	2.6		6.2	
Observations	454		220	

Note: Standardized OLS regression coefficients are displayed. GPA, grade point average.

** $p \leq .01$; * $p \leq .05$.

One important exception must be highlighted. Currently, 71% of students in the United States graduate on time from high school. In the nation's 50 largest cities, that rate drops to 53% (Swanson, 2009). Moreover, many high school graduates are not engaged in postsecondary education. Thus, while our study indicates that demographic factors may not be strong predictors of what youths experience while in school, it seems likely that the longer one stays in school, the more digital media literacy curricular experiences one will receive.

*Digital Media Literacy Activities Can Foster
Greater Politically Driven Online Participation (RQ3)*

Regressions indicate that digital media literacy activities provided a significant boost to rates of online politically driven participation for both high school and college youths (see Table 3). Indeed, as indicated by the standardized betas for these opportunities, the values for digital media literacy activity for the high school and college settings (0.23 and 0.32, respectively) were almost as strong predictors of online politically driven participation as the lagged values of the dependent variable (0.29 and 0.34). Moreover, these betas were larger than for other factors, such as family discussion of politics (0.13 and 0.09), strength of ideology (0.11 and 0.11), and political interest (0.08 and 0.19).

Table 3. Results of Regression Models Predicting Politically Driven New Media Participation.

	High School Panel		Post-High School Panel	
Background Variables				
Female	-0.11*		-0.01	
Mother's education	-0.04		-0.02	
African-American	0.04		0.04	
Hispanic	0.04		0.10	
Asian-American	0.09*		0.08	
Family discussion	0.13**		0.09#	
GPA	0.00		0.02	
Aspiration for 4-year college	0.02		—	
Strength of political ideology	0.11**		0.11*	
Political interest	0.08#		0.19***	
General Uses of New Media				
Time spent online	0.00		—	
Use of e-mail/messenger/messaging	-0.02		-0.02	
Use of blogs/social media for socializing	0.18***		0.15**	
Frequency of video gaming	0.05		0.12*	
Lagged values of outcome variable				
Politically driven participation, wave 1	0.29***		0.34***	
Focal predictor variable				
Digital media literacy activities	0.23***		0.32***	
R² (%)	38.7		48.5	
Observations	426		216	

Note: Standardized OLS regression coefficients are displayed.

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$; # $p \leq .1$.

*Digital Media Literacy Activities Promote the
Frequency of Youth Exposure to Diverse Viewpoints (RQ4)*

We found that digital media literacy activities for high school and college youths are positively associated with online exposure to diverse viewpoints (see Table 4). The impact of these learning opportunities was sizable. For both high school and college youths, the impact of digital media literacy activity (0.18 and 0.26, respectively) was only slightly lower than the lagged value of the dependent variable.

Among the background variables, family discussion was found to be a strong predictor of online exposure to diverse viewpoints. In other words, students who are raised in a family environment where the parents often engage the children in discussions of social and political issues tend to seek diverse perspectives online. However, this parental influence was reduced to nonsignificance among college students. Political interest was found to boost exposure to diverse perspective in both panels. Results also indicate that general uses of new media have a positive relationship with the outcome variable. Use of social media and blogs was associated with online exposure to diverse perspectives in both panels. The amount of time high school students spent online also had a positive association with online exposure to diverse perspectives. Because we did not assess this measure in our post-high school panel, we estimated the regression model without the variable for time spent online. Doing so (results not reported here) did not influence the overall findings reported above.

Table 4. Results of Regression Models Predicting Exposure to Diverse Perspectives.

	High School Panel		Post-High School Panel	
Background Variables				
Female	-0.07		-0.12#	
Mother's education	-0.01		-0.05	
African-American	0.03		-0.03	
Hispanic	-0.06		-0.01	
Asian-American	0.08#		0.17*	
Family discussion	0.16***		0.10	
GPA	-0.05		0.01	
Aspiration for 4-year college	0.01		—	
Strength of political ideology	0.04		0.10	
Political interest	0.12*		0.18**	
General Uses of New Media				
Time spent online	0.10*		—	
Use of e-mail/messenger/messaging	-0.05		0.02	
Use of blogs/social media for socializing	0.12*		0.15*	
Frequency of video gaming	0.09#		0.08	
Lagged Values of Outcome Variables				
Exposure to diverse perspectives, wave 1	0.2**		0.28***	
Focal Predictor Variable				
Digital media literacy activities	0.18***		0.26***	
R² (%)	35.2		36.7	
Observations	423		213	

Note: Standardized OLS regression coefficients are displayed.

*** $p \leq .001$; ** $p \leq .01$; * $p \leq .05$; # $p \leq .1$.

Limitations

This study would be stronger if the sample was larger and proportionally representative of the nation's students. As a result of California's diversity, our sample is more ethnically and racially diverse than the nation as a whole. Moreover, given that high-technology industries are so prominent in the state, it is quite possible that youths here receive more support for digital participation than they do in other parts of the country. More representative and comparative studies are needed. As a result of these limitations, we do not use our data to characterize the frequency of varied media literacy opportunities in U.S. schools. In addition, this survey was designed to capture youths' online participation, both in school and outside of it. Thus, our measure of politically driven online activity and online exposure to diverse perspectives did not distinguish between activities that occurred in school and those that occurred out of school. Consequently, it is likely that some youths counted activities that occurred as a part of media literacy education when describing their overall level of online activity. This likely inflated the relationships we found between digital media literacy activities and the outcome variables we considered. Experimental studies designed to test the degree to which in-school opportunities promote out-of-school discretionary practices are clearly needed, as are studies that test whether changes that occur in youths' practices are sustained over time. Finally, measures of civic and political engagement are diverse and evolving, often spurred by online innovation. Thus, additional studies with additional indicators of civic and political engagement would be helpful.

Implications for Research, Policy, and Practice

This is one of the first studies to assess quantitatively the frequency and distribution of digital media literacy activities and their relationship to varied forms of online civic and political participation. We find that several forms of digital media literacy activity are occurring within public schools in California. Although our sample is not representative of the state, it is diverse, with students from a varied array of districts. Our results provide clear evidence that many youths are currently receiving digital media literacy opportunities in both the high school and college settings. These findings also demonstrate that there is substantial room to expand students' access to these opportunities.

In addition, the general lack of a relationship between demographic characteristics and opportunities for media literacy education contrasts favorably with the provision of many other school-based civic learning opportunities. As noted earlier, many offline school-based civic learning opportunities, such as opportunities for service learning, classroom debates, or opportunities to participate in simulations, are unequally distributed (Kahne & Middaugh, 2008). Higher-achieving students, white students, and those in classrooms where the average SES is higher tend to receive far more of these opportunities. Unlike those findings, however, we did not see indications that opportunities for digital media literacy activities are inequitably distributed based on demographic characteristics.

From the standpoint of policy and practice, a core challenge for reformers is to expand the quantity and the quality of these opportunities while ensuring their equitable distribution. In addition to the challenge of coming up with more ways to expand school-based curricula, a significant part of this

agenda involves the identification of ways to promote digital media literacy education to youths who are not enrolled in either high school or college.

Third, we find that digital media literacy activity is associated with gains in the quantity of politically driven online activities and higher levels of online exposure to diverse perspectives. The relationships we found while controlling for a broad range of demographic factors and prior levels of online activity were consistent and relatively sizable. Thus, these data suggest that support and guidance may well help many youths when it comes to fully tapping the affordances of new digital media to enhance the quality and quantity of their online civic and political participation. As Hargittai (2003, 2010) and others have demonstrated, not all youths are digital natives or fully engaged online. Our results point to the potential value of educational initiatives.

A vast array of curricula can provide the kinds of opportunities we assessed in this study. There are many ways to help individuals judge the trustworthiness of online information and analyze the differing perspectives on social issues they find online (for examples, see Project Look Sharp, at <http://www.ithaca.edu/looksharp/?action=main>, and the Salzburg Academy, at <http://www.salzburg.umd.edu/salzburg/new/media-literacy-curricula>). Given the potential benefits identified in this study, it makes sense for curriculum developers, policy makers, and educators to continue both experimenting with and developing ways to provide these and related opportunities.

Such efforts will be aided by a deeper understanding of how and why digital media literacy education can promote desired online practices. Educators would benefit from a fuller picture of effective ways to help students judge the trustworthiness of online information and analyze the different perspectives on political and social issues they find on the Web. Indeed, there is no doubt that more research is needed. Experimental and qualitative case studies of specific media literacy initiatives would be particularly valuable, both as means of specifying impact, and as ways to gain a more detailed sense of best practice.

In sum, the strong relationships we found are encouraging and argue for greater focus on the potential value of digital media literacy education as a support for the quality, quantity, and equality of civic and political engagement. Given that adolescent new media practices are the youth-directed products of the youths' own preferences, some might assume that schools can do little to impact them. On the contrary, our study indicates that schools may be able to promote desired practices in significant ways. It is important to examine these possibilities more fully, with nationally representative data, as well as with panel data and experimental studies, in order to inform both policy and practice.

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