

## ABSTRACT

Title of Dissertation:                   HOW STUDENTS ACCESS, FILTER  
AND EVALUATE DIGITAL NEWS:  
CHOICES THAT SHAPE WHAT THEY  
CONSUME AND THE IMPLICATIONS  
FOR NEWS LITERACY EDUCATION

Elia Powers, Doctor of Philosophy, 2014

Dissertation Directed By:           Dr. Ronald A. Yaros  
Philip Merrill College of Journalism

Being an informed citizen in the digital age requires the ability to sift through an avalanche of news online and identify content that is credible and diverse. News literacy, a topic with a small but increasing presence in high school and college curricula, is concerned with training students to be discerning news consumers. Assessments of news literacy typically gauge the effects of exposure to news literacy curricula measured through student analysis of media messages selected by researchers. This exploratory, mixed-methods study instead examined how students with no formal news literacy instruction searched for news on a computer using their typical routine, their process of filtering and evaluating news about a topic of interest, and their awareness of their

choices when accessing news online that shape what they consume. This study contributes to the understanding of what digital media concepts, cognitive strategies and evaluation criteria warrant targeting or greater emphasis in news literacy curricula.

Survey results revealed that participants (n=244) typically spend a significant amount of time consuming video and written news, largely through digital platforms and mostly on a computer. They are mostly information scanners and more often stumble upon news online than seek out specific news of interest. Participants have a strong social interest in news, like to share stories with others, and are often trusting of their social networks and technology to filter the news they consume. Concurrent think-aloud protocols and subsequent interviews with a subset of survey respondents (n=37) found that participants often did not pay close attention to the process by which they accessed and filtered news online, doing so in a state of automaticity instead of thinking critically. When asked to explain the thought processes underlying their news searches, a significant percentage of students lacked a conscious awareness or understanding of the strategies and evaluation criteria that potentially affect the credibility and diversity of news consumed. As a result, students' online news habits often placed them at risk for consuming unreliable news and for adopting a hive mindset or being in a news silo.

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FOR NEWS LITERACY EDUCATION

by

Elia Michael Powers

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Advisory Committee:

Associate Professor Ronald A. Yaros, Chair

Professor Peter Afflerbach

Assistant Professor June Ahn

Assistant Professor Kalyani Chadha

Professor Susan Moeller

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## Chapter 1: Introduction

*The most fundamental change [in the digital age] is that more of the responsibility for knowing what is true and what is not now rests with each of us as individuals....Rather than relying on the press, Congress, esteemed commissions, or other social authorities to filter information for them, citizens will increasingly filter information for themselves from a competing array of sources. Though we may little understand how, we are all assuming more control over what we know about the world beyond our direct experience. We are becoming our own editors, our own gatekeepers, our own aggregators (Kovach & Rosenstiel, 2010, p.7).*

### **News Media Landscape in the Digital Age**

Finding news or content purporting to be news has never been easier. Over the last several decades, legacy newspapers, magazines and network news stations have been joined by cable news networks, web-only media outlets, blogs and content aggregation sites that have taken advantage of the internet's extensive reach and relatively low barriers to entry. The proliferation of online sources has coincided with the gradual decline of print media. Traditional news sources such as magazines and newspapers have lost print readers and advertisers, prompting publishers to trim product size and the number of paid journalists or to fold altogether. News outlets face the challenge of producing a constant stream of content with a diminishing number of reporters and a dwindling number of editors. Much of this content is distributed online, where it is linked to, commented about, quoted and repurposed.

As the journalism landscape has shifted, attitudes about the press have become increasingly negative. Two-thirds of Americans believe news stories are often inaccurate and three-fourths that news organizations tend to take sides. As many people believe news organizations hurt democracy as protect it. Negative opinions about the performance of news organizations either equal or surpass all-time highs in 9 of the 12 measures the Pew Research Center has tracked since 1985 (Pew, 2011b).

## *News Consumption Habits*

News consumers have access to an unprecedented volume of information, much of it free and available on a variety of digital platforms. More than three-quarters of adults in the United States own a laptop or desktop computer (Pew, 2012a), just over half own a smartphone (Smith, 2013) and more than one-third own a tablet (Zickuhr, 2013). Digital news consumption is on the rise: In 2010, the percentage of people who reported getting news online at least three times per week surpassed newspapers for the first time (Pew, 2011a). In 2012, nearly four in 10 Americans received news online or from a mobile device, up from 34 percent in 2010. By 2013, the share of people who received news from one or more digital news sources on an average day rose to 50%, just below the audience for television news (Sasseen, Olmstead, & Mitchell, 2013).

While mobile news consumption is increasing (Sasseen et al., 2013), people 18 and above are still three times more likely to use a computer than a smartphone and five times more likely to use a computer than a tablet to access digital news (Pew, 2012b). The majority of mobile news consumers are not replacing one platform with another. Roughly three-quarters of smartphone owners report that they also get news on laptops or desktops (Sasseen et al., 2013). People are not only more likely to access news on a computer than other platforms but they spend more time doing so (Pew, 2012a).

Across digital devices, the most popular way for people to find news is by going directly to a news outlet, followed by using keyword searches on sites such as Google and Bing, visiting news aggregation websites/apps, and using social media sites. When people use desktops or laptops for news searches, they are most likely to “very often” go directly to a news outlet (33%), ahead of using keyword searches (30%), visiting news

aggregation sites/apps (26%), and following Facebook (6%) or Twitter recommendations (2%) (Pew, 2012b). Those who get news online most commonly reported using Yahoo/Yahoo News (26 percent), Google/Google News (17 percent) and *CNN* (14 percent) (Pew, 2012b). Users who go directly to the most-often-visited news outlets through a computer spend an average of 4 minutes and 36 seconds per visit – roughly three times as long as those who come to the site through a search engine or Facebook (Mitchell, Jurkowitz, & Olmstead, 2014).

Social media is not generally used to access news as often as other types of online portals, but its use overall is increasing. Nearly three-fourths of online adults use a social networking site and more than 40% use multiple sites. Facebook remains the most popular platform by a wide margin – used by more than seven in 10 online adults (Duggan & Smith, 2013b). Nearly half of adult Facebook users ever get news there (Mitchell, Kiley, Gottfried, & Guskin, 2013). Twitter and Instagram have gained ground on Facebook in user totals, largely fueled by their popularity among young people (Duggan & Smith, 2013b). News consumption on social media sites is often incidental. For example, the vast majority of Facebook users get news when on the site for other reasons and view it as a supplemental news source (Mitchell et al., 2013).

These studies illustrate the growing number of choices for news consumers. News, defined in this study as “information about current events or issues,” is easily searchable through the web and mobile apps, filtered through aggregators and discovered through social media. Technology makes it easy to switch between portals and news sites. Those who “check in on the news” from time to time as opposed to getting it at regular times are now in the majority (Pew, 2012a). Online news users more often come

across news daily while they are online doing other things (59%) than go online specifically to get news (48%) (Purcell, Rainie, Mitchell, Rosenstiel, & Olmstead, 2010). Most news consumers report being overwhelmed by the amount of news they confront (Purcell et al., 2010), particularly if they are accessing it on platforms and outlets such as computers, e-readers and Facebook (Holton & Hsiang, 2012).

### *Profiling Young News Consumers*

Young people are more likely than the overall population to have access to digital technology. Ninety-three percent of teenagers have a computer at home (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013) and nearly 80% of those between the ages of 18 and 24 own a smartphone (Smith, 2013). Social media use is widespread among this age group: 94% of teenage social media users report having a Facebook profile – with 81% reporting that Facebook is the profile they most often use. More than one in four teen social media users have a Twitter account and 11% have an Instagram account (Madden et al., 2013). Eleven percent of 18-29-year-olds who use the internet use Reddit (Duggan & Smith, 2013a).

While young people are constantly “plugged in,” they spend less time with news than other age groups. Those under 30 reported consuming an average of 45 minutes of news “yesterday,” 17 minutes fewer than the age group with the second-lowest average. Twenty-nine percent of people under 25 said they got no news yesterday either from digital news platforms (including cell phones and social networks) or traditional news platforms (Pew, 2012b). People under 25 far more commonly access news online than through traditional print and broadcast sources (Pew, 2012a). Young adults (those under age 30) are the most likely age group to have news forwarded to them. They are also the

likeliest (68%) to use portal news sites on a daily basis that gather news from various sources. Far fewer young people (36%) than older age groups go to the website of a national or local newspaper or a news website where users rank stories (7%) on a daily basis (Purcell et al., 2010). A 2012 survey of undergraduates at the University of Maryland found that 59% most commonly accessed news directly from a news source, while 24% most commonly used a news aggregation site and 12% news posted to social media (Powers & Koliska, 2012).

### *News Customization and Personalization*

Young news consumers often sample from a variety of news outlets rather than develop strong connections with a few media brands (Adler, 2013). Many customize their news using “push” technologies, mobile apps, social media and news aggregators. Forty-two percent of internet users who get news online report that it is important to them when choosing news sites to be able to customize the news they access. Twenty-eight percent have customized their home page to include news from sources and on topics that particularly interest them and 67% only follow subjects of interest (Purcell et al., 2010).

Media companies not only allow users to customize the digital media content received but use technology to personalize news for them – with or without their consent. Google enhanced its personalization technology in 2009 by putting personalized search in place for all users, not only those who are signed into services such as Gmail. Google customizes search results for everyone based upon 180 days of search activity linked to an anonymous cookie in a user’s browser (Google, 2010). Search algorithms no longer simply track how often search terms appear in indexed web pages (Gillespie, 2013). Google uses dozens of click signals – data gathered about its users – to serve up pages

that are timely and relevant. These include search location, search history, language, browser, computer, and time taken to make decisions (Pariser, 2011).

In July 2010, Google News introduced a personalized version of its service. While the site still highlights top stories of broad general interest for all users, below the top of the page users find news stories that are geographically and personally relevant based on search history and the articles users have previously selected (Pariser, 2011). Google News founder Krishna Bharat said the site attempts to find a balance between personalization, which tends to shrink the universe of news and news sources, with exposing users to content they may otherwise miss.

Once you've discovered in the Google News context that the reader has a preference for a certain source, we serve them well by providing them other sources as well...Diversity is important but at the same time we should promote first and foremost what the reader enjoys reading (Gaither, 2010, p.1).

Google News relies on an automated system that uses text clustering to find and post in proximity similar news from around the web. While both Google News and Yahoo News rely heavily on algorithms, they also use human editors as gatekeepers (Bui, 2010). Google's editors decide which sites to include, requiring it to develop criteria to distinguish between a news site and a non-news site. These decisions ultimately shape the items included in any search result (Carlson, 2007). At Google, humans edit the databases used to create summaries of information that appear on the right side of a search page. Evaluators also help Google tweak its search algorithms (Lohr, 2013). Bharat said when determining rankings for items displayed, Google News pays close attention to decisions made by news editors – what an outlet chose to cover, when an item was published and where it was placed on the front page. Aggregate decisions made by journalists, most notably the number of outlets publishing news on a topic recently, factor heavily into the

ranking decisions of Google News (Gaither, 2010). Google News also considers factors such as the user's location, freshness, and the reputation and quality of the source. In determining source reputation and quality, Bharat said Google News looks to signals such as circulation figures and users' online behavior.

Yahoo News employs a personalization algorithm called Content Optimization and Relevance Engine (CORE) that determines the appeal of items produced by Yahoo and other news outlets to specific audiences. Yahoo creates a profile for each user based upon personal information such as gender and age (for registered users), user Yahoo site visit history and items read during the most recent visit. The algorithm uses this information to determine which "news package" – a bundling of headlines, text, photos and links – assembled by editors will be most attractive to users (Boyd, 2011). The algorithm continually tests what packages attract visitors' attention and ranks them based on likely appeal to users of different demographics – particularly age, gender and location. Yahoo describes this process as "matchmaking" (Boyd, 2011). The algorithm also determines which story categories, such as technology or entertainment, should be shown prominently on the page to maximize user engagement. Yahoo's front page editors use information from this algorithm to determine the type of stories from Yahoo's own content producers or outside news organizations to feature in order to assemble packages that are likely to attract the most hits. Editors can override the algorithm for breaking news that might not otherwise attract the most attention. As a Yahoo computer scientist told *Fast Company*: "From the beginning we made the decision that we weren't going to make everything entirely algorithmic. We need to leverage the editors and let them [use] the data we have to make smarter decisions in real time" (Boyd, 2011, p.1).

Facebook's algorithms predict what each user wants to see based on past visits and filter items that appear on the user's News Feed. The algorithm takes into account what users click on, what they share and with whom they interact. Specifically, Facebook pays attention to the "social graph" – the set of each person's relationships. In determining how to rank posts on its News Feed, Facebook considers factors such as affinity (the frequency with which a user interacts with a person or visits his/her profile page), type of content posted (very heavy weight is given, for instance, to relationship status), timeliness and number of comments (Pariser, 2011).

In 2013, Facebook redesigned its home page in part to allow users to view specialized, topic-specific news feeds from friends. Mark Zuckerberg, Facebook's chief executive, introduced the changes by saying that he wanted Facebook to be "the best personalized newspaper in the world" (Sengupta, 2013). Facebook's "News" page from August 2013 further explains that,

*Ideally, we want News Feed to show all the posts people want to see in the order they want to read them...When a user likes something, that tells News Feed that they want to see more of it; when they hide something, that tells News Feed to display less of that content in the future. This allows us to prioritize an average of 300 stories out of these 1,500 stories to show each day. (Facebook, 2013, p.1)*

The site added a trending topics bar, displays related articles directly below a News Feed post to help users discover content they may find interesting (Kacholia & Ji, 2013) and gives preference to "high quality" articles. Facebook's News Feed manager said that the source of the content – the news outlet from which it comes – is the primary factor taken into consideration when determining quality (Kafka, 2013). Facebook also introduced an iPhone app that uses a combination of human editors and algorithms to recommend content to users based upon personal preferences (Goel & Somaiya, 2014).



Twitter describes what criteria it uses to determine “trending” topics in general terms – the velocity of a term’s surge, whether it has appeared on the trend list before and whether it circulates within or spans across clusters of users. “What is unstated is how these criteria are measured, how they are weighed against one another, what other criteria have also been incorporated, and when if ever these criteria will be overridden” (Gillespie, 2013). Twitter uses contract workers, called “judges,” to interpret ambiguous language and help determine the meaning and context of search terms that quickly spike in frequency (Lohr, 2013).

People evaluate, edit or correct an algorithm’s work. Or they assemble online databases of knowledge and check and verify them — creating, essentially, a crib sheet the computer can call on for a quick answer. (Lohr, 2013, p.1)

Twitter refers to this as “real-time human computation,” and two top engineers wrote in a blog post that “humans are core to this system” (Chen & Jain, 2013).

Social news sites such as Digg and Reddit also rely on user recommendations and algorithms to filter and rank news. Reddit’s front page mixes the articles that its users deem most important with users’ personal preferences (Pariser, 2011). On Reddit, timeliness of posts are weighted heavily, and the first people to vote up or down on a news item most influence whether it stays high on a page or drops. Down votes damage a news item much more than up votes help it – creating an inherent disadvantage for controversial stories. Items on Reddit that do not receive constant approval begin to fade. Reddit constantly monitors and corrects cases of organized downvoting without publicizing the tactics used to do so (Gillespie, 2013). Despite efforts to identify popularity, research shows that Reddit overlooked more than half of the most popular links the first time they were submitted, suggesting that many get ignored (Gilbert, 2013).

In addition to search engines, news aggregators and social media/news sites, traditional news outlets and web-only publications also gather user data to personalize content. Readers of *The Washington Post* and *The New York Times* can opt to have personalized content and recommendations delivered based largely on reading history (Washington Post, 2012; New York Times, 2013). *NPR* has made a strong push to personalize the user experience on its digital platforms, including an app that uses algorithms to identify content of likely interest to individuals (Depp, 2014). The public media organization is one of many sites to use geolocation data to localize headlines on the main home page for users in different cities (NPR, 2013). *CNN* tracks cookies to customize content based on site usage, recognizing people by name upon access (CNN, 2013). *BBC* also uses cookies to analyze the profile of visitors and customize its home page (BBC, 2013). To personalize users' experiences when connecting to the *Huffington Post* and many other sites through a third-party service like Facebook or Twitter, information is gathered such as the popularity of news items and comments made by others in their network (Huffington Post, 2013). *Politico* customizes features and advertising based upon how individuals use its web site (Politico, 2013).

Personalized filters are, in essence, prediction engines (Pariser, 2011) that constantly work to distribute the kind of news and information users will like. These technologies increase the likelihood that no two users will be presented with the exact same news. Personalized news services present users with topics and sources of known interest but may not serve those who want to browse for news with no specific purpose in mind (Lavie, Sela, Oppenheim, Inbar, & Meyer, 2010).

Proprietary algorithms with formulas rarely known to users increasingly influence how people access news. Algorithms may introduce summarization bias (affecting the selection of content to highlight in a description), personalization bias (sacrificing the display of a wide variety of content in favor of news that aligns with users' interests), optimization bias (using criteria such as number of page views that may favor prurient interests over civic ones), ranking bias (using "top news" or trending lists) and association bias (search engine optimization [SEO] used by content producers to link keywords with the target site) (Diakopoulos, 2012). Click signals produce data used to determine relevance, which is a "fluid and loaded judgment" (Gillespie, 2013).

The repeated consumption of news that is filtered according to the habits and preferences of individuals and others with whom they interact digitally may result in an information silo in which news sources and perspectives become increasingly narrow and insulated. This is sometimes referred to as the "silo effect." One study found that, particularly in the case of news stories that are highly polarized, the manner in which news is disseminated on Twitter (from users with a strong bias, in this case) tends to compound the silo effect (Kwak, Lee, Park, & Moon, 2010).

### **The Need for News Literacy**

Constant connectivity and access to digital news may promote a state of automaticity, in which users consume news with an uncritical eye or an overly cynical mindset. Being an engaged, well-informed citizen in the digital age requires a heightened ability to navigate the maze of online information portals, assess the reliability of sources, check the veracity of information, and understand the difference between promotional material and news, opinion and fact, original reporting and recycled content. Filtering the

glut of information to find credible and diverse news from trustworthy sources requires a distinct set of critical thinking strategies and criteria, as well as an awareness of how choices when accessing news can shape what is consumed.

The ability of citizens to sift through the flood of online information and make informed judgments about what is reliable is integral to a functioning democracy. As The Knight Commission on the Information Needs of Communities in Democracy stated, “Successful participation in the digital age of media requires, in part, the ability to access, analyze, evaluate, and create information products” (Waldman, 2009). The ability to think critically when confronted with digital content is a central tenet of news literacy, one of the many “new literacies” in the information age (Lankshear & Knobel, 2006).

Teaching students to apply critical judgment to media messages and preparing them for democratic citizenship have long been aims of media education (Masterman, 2001). News literacy education has been shown to help students develop critical thinking skills and assess the credibility of information. It allows people to make independent choices with regards to the content they select, helps them develop strategies with which to analyze and discuss media messages, and promotes an awareness of the impact of media on the individual and society (Silverblatt, 2008). News literacy provides a forum to teach students about the need for skepticism and critical news consumption. Ray Suarez, a *PBS NewsHour* anchor who is active in the News Literacy Project, which brings journalists into classrooms to teach news literacy skills, is invested in the idea of audiences questioning everything they read and hear.

As someone who has had to head out to ask people about the places they live, and tell stories to yet other people about those they've never met I've always been fascinated by how the audience makes sense of the world based on what we tell them. I have always been sure that more information gets you better democracy

than less. I have always been sure that the kind of empathy, the kind of fellow-feeling needed to make the decisions of a citizen is only possible when people are informed.

But, the audience should always be reminding itself that the carriers of these images, messages, and information are employees of businesses. Who are these people? Where do they see their own interest? Why are they telling me this? The readers, listeners and viewers should be engaged in a constant critique of what they're being told. (R. Suarez, personal communication, April 7, 2011)

### **News and Media Literacy in the Classroom**

At a time when news consumers have more choices than ever before, some journalism educators are turning their attention to training news audiences. Courses in news or media literacy teach high school and college students with little in-depth exposure to news media in a classroom setting to think critically about the purpose or value of media content. A 2013 study found that educators perceive students to have limited media literacy competencies, particularly in the area of media analysis. The survey, sent to faculty from elementary schools through colleges across the country, showed that lessons about finding relevant information on the Web is commonplace in the curriculum and an important pedagogical goal. Media analysis was found to be the single most important dimension of media literacy (Schmidt, 2013). A 2007 survey sent to faculty in communication and education departments at four-year colleges found that 158 across the country reported offering media literacy courses (Stuhlman & Silverblatt, 2007). The 2013 study found that media literacy is most likely to be addressed in post-secondary education – often in classes that are not called “media literacy” – and is less commonly taught in early grades (Schmidt, 2013).

Appreciation of the value of news literacy instruction in particular was documented in a 2012 study of youth and political action in which 84% of respondents said they would benefit from learning more about how to gauge what news is trustworthy

(Cohen et al., 2001). Stony Brook University, prominent in the push for news literacy education, opened The Center for News Literacy in 2007 with the mission “to educate current and future news consumers” (Center for News Literacy, 2013). The center received several grants from major journalism funding organizations to create digital learning materials and spread its course model to high schools and colleges interested in integrating news literacy into their curricula. The Knight Foundation has a stated interest in “promoting quality journalism” and “training journalists” (Knight Foundation, 2012). The Ford Foundation has a stated interest in “increasing civic participation” and “advancing media rights and access” (Ford Foundation, 2012). The McCormick Foundation seeks to “create an informed, news-literate and engaged citizenry through quality content, audience education and protection of press freedoms” (McCormick Foundation, 2012).

Six years after its founding, more than 30 colleges and three-dozen high schools had adopted all or part of “The Stony Brook Model” using learning materials derived directly from the university’s news literacy course, which is taught to thousands of its undergraduates. At Stony Brook, news literacy was conceptualized as a way to teach students to watch and read news critically based on the tools and techniques used by professional journalists (Fleming, 2012). The News Literacy Project, founded in 2008 by Alan C. Miller, an investigative reporter with *The Los Angeles Times*, also plays a major role in news literacy education by bringing journalists into dozens of high schools.

The consolidation of media ownership, the expansion of web-only news sources and cable news, declining advertising revenue and shrinking audiences have caused many print and broadcast journalists to become concerned about slipping standards of

journalism. Some journalists and journalism educators view news literacy education as a way to teach a younger generation to appreciate traditional news values and tenets of professionalism. These educators have taken a more proactive approach to help direct the future of their profession and cultivate audiences that will largely determine that future. The News Literacy Project's director, Alan Miller, said a purpose of news literacy is to build "an understanding and appreciation of quality journalism to sustain the demand that will assure its future" (A. Miller, personal communication, April 13, 2011). Howard Schneider, dean of the Stony Brook University's School of Journalism, said that "it is no longer sufficient to just train journalists. We have to address consumers – the demand side of the equation" (H. Schneider, personal communication, July 12, 2010).

### **History of Media and News Literacy**

The idea of teaching students to adopt a critical mindset when evaluating media in the United States dates back to the early 1900s, when visual education organizations promoted the idea of teaching students how to develop standards by which to judge films and appreciate their visual techniques (Hobbs & Jensen, 2009). Media literacy gained traction following World War II as concerned citizens and media professionals coalesced around the idea of helping students understand propaganda and the power of media messages. The fight against fascist propaganda had been a major theme of the war, as the Nazi party in particular used the emerging mediums of radio and film to spread their messages to a broad audience. Educators who belonged to the National Council of Teachers of English started a campaign in the 1940s to help students recognize the rise of public relations and propaganda, and to understand the ways language can be used as a manipulative tool (R. Hobbs, personal communication, April 15, 2011). Media literacy

educators pointed to news and advertising as examples of media texts that could easily display biased points of view.

Journalism became an easy target for criticism because of its symbiotic relationship in the 1940s and early 1950s with government agencies. Prominent journalists headed the Office of War Information and Office of Censorship during World War II. American wire services provided the Office of War Information their services for free, and NBC and CBS provided the Voice of America with the bulk of its programming. Network television started as the Cold War began, and it quickly became an influential news medium. From 1948 to 1954, government information officers and network news divisions joined forces to produce television series airing on the major networks that helped sell the Cold War to the American public (Bernhard, 1999).

Despite being the foremost mass media producer in the world, the United States long lagged behind other countries in its delivery of media literacy education. Australia, Canada and England are among the countries that have had extensive media education initiatives for decades, including national media literacy curricula (Schwartz, 2005). Foreign governments have championed media literacy as a way to eradicate illiteracy, promote free expression and develop a free press in emerging countries where citizens have never experienced independent media. Rhetoric about social change, nation building and human rights is attributed more to the media literacy tradition of Europe than to that of America, which has been led primarily by grassroots organizations and private institutions rather than the government.

In the United States, the dominant view of the mass media has been one of deep-rooted mistrust (Masterman, 2001). Skeptics of media literacy education have long



argued that teaching about the mass media meant endorsing “low” culture, which went against the function of schools. Educators have historically not seen journalistic writing as an appropriate classroom text. Yet it was impossible to deny the pervasiveness of media in American life. The National Society for the Study of Education’s 1954 yearbook, “Mass Media and Education,” acknowledged the growing impact of movies and newspapers on American society, and thus on schooling (Schwartz, 2005).

In the early days of media literacy education, the medium of radio received the most attention. As early as the 1930s, a Wisconsin chapter of the American Association of University Women evaluated the quality of radio programming, lobbied broadcasters to serve the public interest and taught its members to be “discriminating listeners” (M. Rowe, personal communication, April 8, 2011). Out of this initiative came the American Council for Better Broadcasts (known now as the National Telemedia Council), founded as a nonprofit in 1953 to evaluate and call for improved radio and television programming. The group’s focus largely turned to television in the 1950s and beyond.

With its visibility and omnipresence in American homes, television came under intense scrutiny from media literacy advocates seeking to teach critical viewing skills. Educators and media professionals began calling for transparency in television that allowed viewers to “see how the sausage is made” (Hobbs & Jensen, 2009). Marshall McLuhan, a prominent media philosopher, gave voice to the idea that the mass media were turning the world into a “global village,” in which news had a wide reach and influence. The book *Understanding Media: The Extensions of Man* illustrated that the media were a subject worthy of serious scholarship. McLuhan advocated the use of electronic media as a teaching tool in schools. A contemporary of McLuhan’s, media

scholar and educator John Culkin, is credited with introducing to a mass audience the ideas that young people should be taught to analyze the media and that it is the school's responsibility to help create a media literate population. Books such as *How to Talk Back to Your Television Set*, *Amusing Ourselves to Death* and *How to Watch TV News* challenged audiences to think critically about television news and entertainment programming.

Whether media literacy should be viewed as a way to inoculate young people from the harmful effects of media or to teach them how to critically examine media content has been a subject of debate. The mass media's emphasis on entertainment and consumption often have been denounced as undercutting the public culture needed for a functioning democracy (Livingstone, Van Couvering, & Thumim, 2005). The 1960s saw a range of experiments involving hands-on media education in high schools. Amid skepticism from the general public, the United States government invested several million dollars to pilot "critical viewing" curricula in preschool, elementary, middle and high schools and colleges. The main objective of this program was to protect young people from what many believed to be the harmful effects of television. The support from the government was short-lived, and media literacy was "one more passing educational fad" (Schwartz, 2005).

Inoculation from media content was the dominant approach to media literacy until the 1970s, when media literacy education began to emphasize teaching students the techniques used by filmmakers, advertisers and journalists to allow them to create their own media messages. This new paradigm adopted a "student-centered perspective" that began from young people's existing knowledge and media consumption habits, and that

prepared students to assess media content rather than protect them from it (Buckingham, 2003).

Throughout the 1970s and beyond, media literacy education was recognized as a critical practice of citizenship (Hobbs & Jensen, 2009). Groups such as the National Education Association and the National Council of Teachers of English recommended that media literacy be taught in schools across the country. Colleges offered courses such as “radio-television audiences,” “contemporary problems in broadcasting,” “radio-television program evaluations” and “content analysis of radio and television newscasting” that enabled students to think critically about the news media (Niven, 1960). By the late 1970s, the United Nations Educational, Scientific and Cultural Organization (UNESCO) had declared that the mass media have an essential role to play in the education of young people (Schwartz, 2005).

The Center for Media Literacy was founded in 1989 as an educational organization providing professional development and educational resources. By the 1990s, a new grassroots effort took hold, with parents and teachers taking the lead rather than government officials. Many proponents of media literacy began deemphasizing the inoculation approach and focused their efforts on helping students deconstruct media messages and find trusted content. In 1992, the first National Leadership Conference on Media Literacy was convened by the Aspen Institute, bringing together dozens of educators and activists to establish a definition, vision and framework for developing media literacy programs in the United States (NAMLE, 2012). Several national conferences on media literacy followed in subsequent years. Responding in part to the rise of computers and the Internet, The Carnegie Council on Adolescent Development in

1995 published “Great Transitions: Preparing Youth for the 21st Century,” which stated that “schools would do well to introduce instruction and activities that contribute to media literacy” (Schwartz, 2005).

As a way to bring together the disparate groups of people who support media education, the Alliance for a Media Literate America was formed in 2001. The Action Coalition for Media Education was founded in 2002, and the two organizations continue to disagree about how to define the goals of media literacy. AMLA, now known as NAMLE, views media literacy mostly as an effort to ensure that “people have the skills needed to critically analyze and create messages using the wide variety of communication tools now available” (NAMLE, 2012). ACME supports teaching people to be critical media consumers but also emphasizes media reform and activism with the aim of democratizing media (Schwartz, 2005).

Throughout the 1990s and into the 2000s, media literacy education became more visible in K-12 schools, although the inclusion of such curricula in the classroom was far from widespread (Hobbs, 2004). Among the theories for why media literacy efforts in the United States largely failed to take root are that unlike other English-speaking countries, the leading media literacy advocacy groups in the United States are outside the educational establishment and wide-ranging educational reform is difficult with powerful, diverse local school boards (Kubey, 1998). Proponents of school-based media education were bolstered by a 2003 report called “Learning for the 21st Century,” published by the national organization Partnership for 21st Century Skills and endorsed by the U.S. Department of Education, the National Education Association and a range of technology

companies. The report named media literacy as one of the core information and communication skills for the present century.

In 2008, newspaper editors initiated a small seminar at the Poynter Institute “to understand and promote news literacy.” The “Rebooting the News” conference later that year had a similar mission of advancing the nascent news literacy field. In 2009 and 2010, the Center for News Literacy at Stony Brook sponsored meetings of prominent journalists, university presidents, journalism school deans and other academics to examine strategies for teaching news literacy to undergraduate and high school students.

Despite increased recognition, champions of media education still face “all the problems of a young field – becoming visible in the academic world, acquiring credibility among educators and others, developing a strong research base, and finding funding” (Schwartz, 2005). Many educators remain unfamiliar with the terms media literacy and news literacy. The slow pace of adoption of news and media literacy curricula in secondary schools and colleges continues to frustrate media education proponents such as Center for Media Literacy founder Tessa Jolls.

There’s a lot of talk about teaching 21<sup>st</sup>-century skills but we aren’t seeing that in practice. When you walk into classrooms students don’t have the skill sets needed to sort out fact from opinion or deconstruct a news story” (T. Jolls, personal communication, April 12, 2011).

A growing number of journalism educators and foundations that have supported news and media literacy courses have pressed for evidence that curricular interventions have had a measurable effect on students. As Arke and Primack (2009) write,

Generalizations (regarding learning outcomes) will not be sufficient as the field of media literacy develops. Accrediting bodies stress assessment to ensure that stated goals and objectives are being obtained. Thus, in order to show the value of the subject matter, media literacy advocates must develop and possess tools to

accurately measure and report results that show the desired skill development and improvements.” (p. 55)

In response, recent efforts to refine news literacy education have focused on determining learning outcomes, experimenting with instruction while piloting courses and creating assessment tools. However, the concepts and critical thinking strategies identified as outcomes and the manner in which student learning has been assessed still inadequately account for the role that the process of accessing news online plays in determining perceived and actual credibility of content.

### **Dissertation Purpose**

There has been very little emphasis in news and media literacy research and pedagogy on how students find news online and how aware they are of the choices they make that influence what they consume. Most of the scholarly focus has been on students’ understanding of media messages and their ability to critically evaluate media texts. To date, assessments of the effects of exposure to news or media literacy curricula have focused heavily on tests in which students analyze media messages selected by researchers rather than the students themselves. Students’ ability to apply concepts and cognitive strategies to their own online news seeking and filtering routines has largely been ignored. Students need to think critically not only during the content evaluation phase but also during the news search phase, in which they are exposed to a torrent of information from an array of sources and sites that filter and organize the news they find.

This exploratory, mixed-methods study examined how college students accessed, filtered and evaluated news about a topic of interest in an open-web setting, and measured how aware participants were of their choices that shape what news they consume. A distinct set of user considerations and choices in the process of seeking news

online can affect the credibility and diversity of the news selected. This includes accessing news from sources that select and display news in ways that are not apparent (as described above), promote an objective such as a partisan or commercial interest, or publish material without clearly citing the original author or source. In addition to issues of credibility, the diversity of news accessed online can be diminished by choices made by both the user and others in ways that may not be readily apparent, implicating the “silo effect.”

The cognitive strategies used in the process of accessing news online are not well-defined in news literacy curricula. Potter (2004b) wrote that it is impossible to design educational experiences unless researchers know more about how the human mind works during media exposures. This study contributes to the understanding of the critical thinking strategies and criteria applied during the news seeking and evaluation process. An underlying premise of this dissertation is that effective teaching of the concepts, strategies and criteria involved in the process of accessing and evaluating credible and diverse news will enable students to become discerning news consumers. The purpose of this study is to inform decisions about the content of news literacy curricula and learning outcomes to be assessed.

In an effort to promote authenticity and ecological validity in the methods used to assess news literacy, this study aimed to give students agency, or a sense of personal investment, in the news gathering and analysis process through tasks that took into account the ways in which students typically access news online. In short, this study built on existing research from fields such as information science, communication and education about how young people seek online information. It extended the news and

media literacy literature by examining how participants in an open-web setting evaluate news *they* have selected. Using a mixture of surveying, concurrent think-aloud protocols and interviews, this study specifically posed the questions:

*RQ1: How do college students access news and what news topics do they prefer?*

*RQ2: What online sites do students use when accessing news on a computer?*

*RQ3: What search strategies and evaluation criteria do students use to seek out news about a specific topic of interest?*

*RQ4: How aware are students of their choices when accessing news online that shape what they consume?*

### **Dissertation Organization**

Chapter 1 discussed the origins of news and media literacy, and the need for news literacy in the digital age. Chapter 2 begins by examining existing definitions of media and news literacy, and how news literacy is defined in this study. Also discussed are the theoretical underpinnings of news literacy, among them the cognitive theory of media literacy, active audience theories and critical thinking theories. Chapter 2 ends with a review of two theories that help explain the influence of interpersonal networks – the two-step flow and primary/media socialization – and an overview of news literacy pedagogy.

Chapter 3 identifies the assessment objectives of this study. Chapter 4 details the methods used in this study, including the study's design, sample, instrumentation, procedure and method of analyzing data. Chapter 5 presents the study's results. Chapter 6 discusses the results, including implications for news literacy education and the news industry, as well as theoretical implications. The chapter ends with a discussion of the study's limitations, directions for future research and the conclusion.



## Chapter 2: Explicating News Literacy

Both media and literacy are contested terms (Christ & Potter, 1998), and there has long been disagreement about how to operationalize the term media literacy (Buckingham, 2004). Media literacy is one of several literacy categories – other examples being information literacy, digital literacy and health literacy. Literacy has been defined in previous studies as the relationship among several processes: the symbolic and material representation of knowledge, culture and values; and the diffusion of interpretive skills and abilities across a population (Livingstone, 2004). In the modern age, literacy has traditionally referred to the ability to comprehend printed or broadcast information. But literacy has evolved in response to social and cultural change. With the explosion of new platforms and blurring of lines between traditional mediums, scholars have argued for the development of “new literacies” to meet the challenge of new media and technology (Kellner, 2002). Livingstone (2007) suggested that the term literacy is well-suited for a converged environment, because it includes writing and creation as well as reading texts in the traditional fashion. Definitions that conceptualize literacy only as a technical skill undermine critical evaluation and limit its capacity for learning and creative expression (Livingstone, 2007).

Media literacy is a broad area of teaching and research that encompasses topics as diverse as the effects of advertising or entertainment programming on children to the intersection between media and race, gender or politics. Anything that falls within the broad umbrella of “the media” has been studied, taught and included as part of media literacy education. Disciplines as diverse as journalism, education, advertising, film studies and gender studies have claimed ownership over media literacy, operating with

different definitions and frames of reference. Livingstone (2007) persuasively argued that media literacy is not a coherent field because it borrows from the humanities and social sciences without a clear sense of which traditions to accept. As Christ and Potter noted,

Media literacy has been seen as a public policy issue, a critical cultural issue and a set of pedagogical tools. The term is applied to the study of textual interpretation, the audience and is used synonymously with media education. The notion of literacy is also debated – is it a skill or an accumulation of knowledge? (Christ & Potter, 1998, p.7).

There is little agreement about which media literacy definitions to use and which constructs to measure. Arke and Primack (2009) wrote that “there remains a need to rigorously develop, refine, and validate objective measures of media literacy” (p. 56). Christ (2004) argued that those interested in media literacy need to clearly define the term and develop standards and competencies to measure student learning outcomes. The lack of agreed standards and frameworks, and the fractured nature of the field can make the evaluation of media literacy pedagogy difficult (Mihailidis, 2009; Fleming, 2010).

This lack of agreement about definitions and constructs is perhaps explained by the fact that media literacy has historically been seen as a fluid term that is applicable across disciplines, specialties and pedagogies (Mihailidis, 2012). Additionally, no United States communication or media association has directly addressed media literacy standards for higher education.

Most faculty in higher education media programs would probably argue that they teach students to become media literate. If push came to shove, however, they might not be able to articulate exactly what they mean by media literacy let alone how to measure it as a student-learning outcome (Christ, 2004, p. 92).

### **Definitions of Media Literacy**

Although no uniform definition of media literacy has emerged, perhaps the one most widely cited is “the ability to access, analyze, evaluate and communicate messages

in a variety of formats” (Aufderheide, 1993; Livingstone, 2004). Media literacy is often described as the skills and knowledge necessary to use and interpret media (Buckingham, 2003; Martens, 2010), including the ability to assess the reliability of information sources (Jenkins, Clinton, Purushotma, Robison, & Weigel, 2009), and demonstrate skepticism when appropriate (Gillmor, 2008). Viewed through a cognitive lens, media literacy is described as “a set of perspectives that we actively use to expose ourselves to the media to interpret the meaning of messages we encounter” (Potter, 2008, p. 19). Potter identified three essential building blocks of media literacy: Personal locus (goals and drives), knowledge structures (sets of organized information in a person’s memory) and skills that people develop through practice. The skills are analysis (breaking down a message), evaluation (judging its value), grouping, induction, deduction, synthesis and abstracting (Potter, 2008).

Media literacy entails the ability to make meaning, either as a producer or receiver, through the use of signs, signals and codes (European Commission, 2010; Lankshear & Knobel, 2006). Buckingham described media literacy as a critical literacy that “entails the acquisition of a metalanguage, a means of describing the forms and structures of different modes of communication” (Buckingham, 2003). Media literacy is often based on the premise that media do not reflect reality but represent it. Its aim is to develop a broad-based competence of symbolic systems of images and sounds, as well as print (Buckingham, 2003). One of the central purposes of media education is to arm students with the ability to think autonomously, analyze media codes and conventions, and interpret multiple meanings generated by media texts (Kellner, 2002). The underlying

assumption in these definitions is that all media messages are constructed and discerning audiences should be able to deconstruct the messages (Martens, 2010).

Someone who is media literate should be able to access media technologies, make informed judgments about media messages, and engage in a critical conversation about the media they encounter (Scheibe & Rogow, 2012). Jenkins et al. (2009) argued that being media literate means having the ability to assess the reliability of data and to distinguish between fact and fiction. Arke and Primack's (2009) conceptual model of media literacy also included in its framework that students should learn to access, analyze and evaluate media messages.

As these definitions illustrate, the knowledge and skills individuals acquire mainly relate to media industries, media messages, media audiences and media effects (Martens, 2010). Constructs include students' ability to identify the purpose, target audience, point of view and construction techniques used in media messages, and the ability to identify omitted information from a news media broadcast in written, audio or visual formats (Hobbs & Frost, 2003). Christ (1997) opted for a broad definition of media literacy by arguing that media literacy assessments should test students' skills, attitudes, affect, values and knowledge. Part of the media literacy framework is that students develop an understanding of the commercial structure of media industries and the political and ideological implications of this structure (Duran, Yousman, Walsh, & Longshore, 2008).

Media literacy proponents in higher education typically argue that media literacy is a critical component of being an engaged citizen in the digital era. Scholars often frame their findings in relation to applied research topics such as active citizenship (Martens,

2010; Kubey, 2001). Masterman (2001) wrote that media education should help prepare students for democratic citizenship and political awareness. He argued that media education should be evaluated by students' ability to apply what they know to new situations and the amount of commitment, interest and motivation they display.

### **News Literacy as a Distinct Form of Media Literacy**

Media literacy is an omnibus term often used as shorthand for a diverse area of research and teaching that includes digital literacy and news literacy. Each has its own pedagogical interests and priorities. The objectives of news literacy proponents – a focus on the credibility of news, how news is reported and edited and how a free flow of information is central to a functioning democracy – do not necessarily align with the objectives of those approaching media literacy from a film studies or advertising or information science background.

News literacy, often considered a subset of media literacy, is described as “the core concepts developed in the media literacy movement as applied directly to news” (Mihailidis, 2012). Reese defined news literacy as an understanding of how news “works,” including the media and technological systems that support certain meanings embedded in media “texts” and the creative process that yields them (Reese, 2012). News literacy education tends to focus on what makes a news report credible – including citing sources and verification of facts – and how editing and other production choices influence a message (Scheibe & Rogow, 2012). News literacy, as defined by Schneider, the journalism dean at Stony Brook, is “the ability to use critical thinking skills to judge the reliability and credibility of news reports, whether they come via print, television or the Internet” (Schneider, 2010). In news literacy courses, students typically learn about

the historical function of news (including being a watchdog over government), why news matters, the central tenets of journalism (including vetting sources, transparency, accountability, etc.) and why the press sometimes fails to live up to these standards, the different types of information (news, propaganda, advertising, etc.), the difference between assertion and verification, ways to identify intended audience, tone and implied meaning, and the structure of media organizations (including media ownership) (Powers, 2010).

Scholars often assert that news literacy helps prepare students to be active citizens in a democracy (Masterman, 2001; Martens, 2010; Mihailidis, 2012; European Commission, 2010; Reese, 2012). Definitions of news literacy typically include a citizenship component. Dean Miller, director of The Center for News Literacy, said that “Where media literacy concerns itself with media and culture broadly, news literacy is narrowly focused on the citizen’s search for actionable information with which to make decisions, make judgments and take action in their civic life” (D. Miller, personal communication, July 24, 2010). Mihailidis wrote that “News literacy, conceived under the umbrella of media literacy education, offers a new path towards addressing where journalism, citizenship, and technology meet” (Mihailidis, 2012, p. 1).

### **The Constructs of News Literacy Guiding This Study**

The term “news literacy,” as used in this study, incorporates concepts from the foundational media literacy definition, “the ability to access, analyze, evaluate and communicate messages in a variety of formats” (Aufderheide, 1993, p.1) and Potter’s (2008) definition that describes media literacy as “a set of perspectives that we actively use to expose ourselves to the media and to interpret the meaning of messages we

encounter.” The term also incorporates Schneider’s (2010) news literacy definition, “the ability to use critical thinking skills to judge the reliability and credibility of news reports.”

Whereas media literacy often covers the role of advertising, entertainment television and film, this study focused narrowly on news, intentionally defined broadly in this study as “information about current events or issues.” While some constructs of news literacy emphasize the ability to be a news producer, this study focused on being a discerning news consumer in the digital age. Encompassing the concept of metacognition, this dissertation operationalized news literacy as “demonstrating the critical thinking ability and awareness necessary to access, filter and evaluate credible news from diverse sources.”

The first construct, “critical thinking ability,” refers to the ability to demonstrate *use* of higher-order thinking (described in the next section) during a news search. Specifically, when faced with a task to select credible news on a computer, what strategies did students use to initiate news searches and to narrow down news items to consider, and what criteria did they use to evaluate news outlets and news items? The second construct, “awareness,” encompasses both self-awareness and awareness of factors that may affect the credibility and diversity of news accessed. Self-awareness in this study refers to the ability to *identify* (with or without prompting) the search strategies and evaluation criteria applied when consuming news. Awareness of factors that may affect the credibility and diversity of news accessed online includes concepts relevant to how portals and news sites select and organize news to display, the attributes of the news

source and the news item, and how one's news consumption habits may affect news accessed.

This study did not intend to examine all aspects of critical thinking ability and awareness relating to news literacy. Rather, it focused on those required to access credible and diverse news online in a digital age in which available information is virtually unlimited and often difficult to categorize. The heavy focus on the process of accessing online news as a necessary component of news literacy was driven by the premise that without understanding how news seeking strategies affect the qualities of news accessed, the ability to critically analyze the credibility and diversity of content will not alone ensure that much, if any, news that meets these criteria will actually be encountered.

The components of news literacy are not static. Educators must constantly shape curricula to adapt to changing journalism practices and new media technologies. Thus, the above constructs were intended to be sufficiently flexible to encompass a changing set of strategies, criteria and concepts. The constructs were based upon theory described in the below section.

### **Theories Guiding News Literacy**

Media and news literacy courses aim to shape students into discerning media consumers. However, a review of the literature reveals little agreement within media and news literacy education circles about a universal theory for its pedagogy and learning outcomes. In fact, debates about the function of media literacy have historically omitted any discussion of theory. Piette and Giroux (1997) argued that if media education is to establish itself as an autonomous research field or a well-grounded pedagogical field, it



will have to explicitly state its theoretical foundations. “Most media education programs do not present themselves as enterprises indebted to theory, even though they do largely depend heavily on media theory” (Piette & Giroux, 1997). The following are theories that guide news literacy.

### *Cognitive Theory of Media Literacy*

Potter (2004b) made the case for a cognitive theory of media literacy. Within the individual, cognition is of central importance because changes in behavior build from cognitions.

Educating people to be more media literate involves far more than simply making them aware of the media content, motives of the media industries, and the potential negative effects; it needs to build from a deep understanding about how people use the media in their everyday lives, how people come to believe that their media usage is functional to achieving their goals, and how unwanted effects accumulate as byproducts of everyday exposure (Potter, 2004b, p. 266).

Literature in the area of education assessment points to the importance of understanding how students process information when given reading or viewing tasks. The idea of studying metacognition is to better understand how students think, respond to stimuli and are aware of the strategies they use to assess information. As previously noted, Potter (2004b) argued that it is impossible to design educational experiences that have a lasting impact unless researchers know more about how the human mind works during media exposures – including how people interact with the media and how those interactions shape cognitions. “The more we understand this, the more we can locate how media messages amplify the positive things people want to achieve and how those messages lead to risk of negative effects” (p. 268).

A theory of media literacy should be based on the understanding that interactions with media are different than non-media interactions (Potter, 2004b). The question is how

people encounter media messages. Potter suggested that a media literacy theory should be built on four ideas. The first is that an individual's interactions with the media are almost always in a state of automaticity. People are flooded with information on a daily basis. Access to information no longer is the problem; it's how to keep up with the deluge. Individual messages are devalued because there is a glut of information. The nature of messages has changed: They are usually short, fleeting and superficial. It has become more difficult to categorize messages as being information, entertainment or advertising, and to identify the author of a message and his or her intentions (Potter, 2004a). As a defense mechanism, people remain in a mostly unconscious state where their attention is governed by automatic routines. While this automatic processing shields us from dealing with the vast majority of messages, our experience can be narrowed (Potter, 2004a). Additionally, if we become too comfortable using automatic processing to quickly sift through information, our ability to construct meaning and think critically can be weakened. "With weaker skills, we come to depend more and more on the media to tell us what is important and who we should be" (Potter, 2004a). This relates to the second prong of Potter's argument – that these automatic routines are largely conditioned by the media, which create and shape schema about story formulas that people tend to view as natural. The challenge is to pay attention to the bits of information we need while screening out the rest of information (Potter, 2004a).

Third, people have a personal locus – a plan for our goals in media consumption and a belief that we can control events – that can override the automatic routines. However, they rarely activate this override capability. Potter argued that media literacy interventions that focus only on increasing awareness of media messages miss the mark

because information alone does not spark action; people must have the drive to activate their higher-order-thinking capabilities (Potter, 2004b). Finally, a theory of media literacy should take into account the information processing tasks of filtering, the process of determining which messages to pay attention to and which to ignore. People engage in active searching (a conscious desire for a message), scanning (awareness of a goal but no particular question) and screening (message monitoring that requires little attention) (Potter, 2004a).

Potter argued that those who are media literate recognize that there are a wide range of choices in media, use their personal knowledge structures to make decisions among options and select the best option that meets their goal, and understand that their goals and drives determine what gets filtered and what gets ignored. People who are not media literate – those who rely only on the default model of information processing and have little awareness of media effects, influences and themselves – have no choice but to allow the media to make decisions for them (Potter, 2004a).

#### *Two-Step Flow and Primary/Media Socialization Theories*

Two theories that help shed light on the influence of interpersonal networks in the news consumption process are the two-step flow, and primary and media socialization. While both theories predate the era of digital transformation, they both remain relevant to the ways in which online users rely on others to filter the news they consume.

Lazarsfeld, Berelson and Gaudet (1948) first proposed the two-step flow – the theory that ideas flow from the mass media first to opinion leaders and from opinion leaders to less active sections of the population (p. 151). This theory was used to explain the importance of interpersonal networks – specifically opinion leaders who try to

convince others of their political ideas or are asked for their advice on a political question – in influencing people’s election votes. It was also viewed as sign that “the influence of mass media was less automatic and less potent than had been assumed” (Katz, 1957, p. 61). Katz & Lazarsfeld (1955) tested the two-step flow and confirmed that these opinion leaders, also known as “influentials,” tend to be more generally exposed to the mass media (magazines, newspapers and radio) than others in their community, and also more specifically exposed to content most closely associated with their leadership.

Katz (1957) further posited that influence appears to be related to the personification of certain values (who one is), competence (what one knows) and strategic social location (whom one knows). There are various spheres of influence – in the arenas of public affairs, science and fashion, for instance. Influencers have to be seen as both accessible and having expertise. Katz wrote that opinion leaders and those they influence are “very much alike and typically belong to the same primary groups of family, friends and co-workers” (p. 77). The people influenced, he argued, typically share in common with the influencer a high level of interest in the subject matter at hand. Katz found that interpersonal relations are not just channels of information but also sources of social pressure and sources of social support.

Similarly, the theory of primary and media socialization identifies media as a secondary factor in the socialization process of young people. Exposure to media is mediated by the direct influence of influence of one’s personal network – family, school and peers (Kelly, 1999). Thus, meaning and value for young people are often created through social interactions.

### *Active Audience Theories*

While news has long been a popular topic of study, the news audience historically received little attention (Madianou, 2008). Audiences were primarily considered passive, undifferentiated masses that reacted relatively uniformly when accessing and consuming media. Audiences no longer are deemed a mass of undifferentiated people but rather as niches of people defined by their interests and media consumption habits (Potter, 2008). The idea that people encounter media differently and make their own meaning – that is, they are active rather than passive – are among the core tenets of audience reception studies, defined as the “interpretive relationship between audience and medium” (Livingstone, 1998).

The concept of an active audience began to emerge in the 1970s and 1980s with the increasing popularity of reception research (Alasuutari, 1999). Seminal studies from Hall (1980) and Morely & Brundson (1978) gave agency to media consumers by investigating the process by which people actively negotiate the meaning of media messages. Graber’s (1984) study of how people filter and process political information considered the dispositions of individuals – particularly their interest in news. She found that news consumers developed strategies for paring down the flood of news to manageable proportions. Specifically, they ignored the vast majority of content they were exposed to, and paid attention to stories that they viewed as relevant, having emotional appeal or having a societal importance.

Influenced by the constructionist standpoint, scholars used focus groups, ethnographies and longitudinal research to investigate how people interact with media in their natural setting (Bird, 2008). Ethnographic researchers Radway (1984) and Ang

(1996) argued that reception scholarship should not simply pay attention to the content of the message; the situated act of consuming media is important in and of itself and is worthy of study. Decades of reception research has covered several key dimensions of audience practice: the texture of people's audience practices (what they do to access or use media), the media content accessed through those practices and the wider uses and practice contexts served by or associated with those practices (Couldry, 2011).

Technological changes have forced both scholars and media practitioners to think differently about their audiences. This evolution in the nature of media audiences is largely due to audience fragmentation and audience autonomy (Napoli, 2011). There also has been a blurring of the audience-content provider relationship, illustrated by the rise of user-generated content, which can be viewed as a celebration of audience activity (Carpentier, 2011). Bruns referred to those who used to be the audience or consumers of information as "prosumers." He argued that distinctions between producers, distributors and consumers are no longer viable in the internet age, and that producers and users of media content communicate with each other on an equal level (Bruns, 2008).

Scholarship on news audiences has often promoted the idea of the informed citizen. The concept of using the news media to educate audiences has a long history, dating back to mid-20<sup>th</sup>-century public service broadcasting programs that were constructed on the premise of programming as part of a public sphere and the audiences as publics (Butsch, 2008). "It was a citizen who would use media for information, education and discussion. This citizen needed to be cultivated" (p. 77). In theory, following news enables people to perform their roles as citizens (Hagen, 1997). While citizens or "publics" often refer to people who are active and critically engaged,

“audiences” are often referred to as passive, trivial masses (Livingstone, 2005).

Madianou wrote that news audiences have often been differentiated from audiences of other media. News audiences have been idealized as citizens or publics, while other audiences have been considered to be private, disinterested and disengaged (Madianou, 2009). Madianou found that news audiences are both citizens and consumers, rational and emotional, interested in civic affairs and entertainment.

### *Critical Thinking Theories*

Theories of critical thinking can be traced back to Socrates, who popularized an inquiry-based method of questioning that required authorities to justify their claims to knowledge (Paul, 1985). Critical thinking is premised on the idea that knowledge cannot be passed from one person to another but that “knowledge, rightly understood, is viewed as a distinctive construction by the learner” (p. 38). Ennis (1989) provided several foundational definitions of critical thinking: “reasonable reflective thinking focused on deciding what to do or believe,” “the correct assessing of statements” and “the propensity and skills to engage in activity with reflective skepticism” (p.4). Experts pooled from philosophy, education and other fields defined critical thinking as “purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation and inference” (Facione, 1990, p. 2).

Critical thinking includes cognitive skills in interpretation, analysis, evaluation, inference, explanation and self-regulation (Facione, 1990). In Bloom’s (1956) seminal taxonomy of educational objectives, analysis and evaluation are among the higher-order thinking skills, defined as those requiring advanced levels of cognitive processing. Paul (1985) argued that successful critical thinking instruction demands that teachers

understand students' cognitive processes. While critical thinking skills transcend specific subjects or disciplines, exercising them in certain contexts demands domain-specific knowledge, some of which may concern specific methods and techniques used to make reasonable judgments in those specific contexts (Facione, 1990).

Critical thinking theories are found in both the journalism/media studies and higher education literature. Blanchard & Christ (1993) made the case that journalism education should be more than just skills based and should teach students to analyze the media messages they encounter and produce. A similar case was made by De Burgh (2003), who argued that journalism should promote the idea of teaching analytical skills in order to be considered a "serious academic discipline" (De Burgh, 2003). Shoemaker argued that critical thinking in a journalism-mass communications setting should teach students how to ask intelligent questions, support arguments with evidence, identify assumptions and examine problems from multiple points of view (Shoemaker, 1993).

Universities have historically considered critical thinking to be central to their founding missions. These values were reinforced in the 1930s and 1940s by the presidents of the University of Chicago and Harvard University. At a time when the news media had been greatly influenced by government propaganda efforts, the presidents argued that "the unifying principle of a university is the pursuit of truth for its own sake" and that universities should be the "centers of criticism" (Cole, 2009). Teaching students how to be skeptical about the information they consume was viewed as a core mission of higher education.

A review of more than 40 studies of teaching critical thinking skills in higher education found that researchers and educators typically agree about the importance of



teaching critical thinking skills in the academy (Behar & Niu, 2011). Among the most agreed-upon learning outcomes for a liberal arts education are that students demonstrate critical thinking capacities – including the ability to examine issues rationally and coherently (Blanchard & Christ, 1993). In secondary education, critical thinking was among the “thinking movements” that gained popularity in the 1980s as schools considered how to adopt teaching methods that moved away from delivering information and toward teaching critical competence (Feuerstein, 1999). Many states now include critical thinking in their education standards.

One of the great debates in critical thinking literature is whether critical thinking should be taught as a separate subject, be infused in instruction in existing subject-matter areas, result from students’ immersion in a subject matter or be taught as a mixture of the above (Ennis, 1989). The first approach teaches critical thinking skills and dispositions apart from the presentation of content of existing subject matters. The infusion approach, often endorsed by K-12 educators who are unable to find space for a standalone news literacy course, asks students to think critically and makes the subject and general principles of critical thinking explicit. The immersion approach asks students to think critically in a subject matter without explicit mention of general critical thinking principles. Feuerstein (1999) contended that media literacy programs are based on the infusion approach of teaching critical thinking. Media literacy often involves immersive teaching about critical thinking within existing lessons about various curriculum subjects. Students often are introduced to media texts, such as news articles and television programs that are applicable to their daily lives.

Media literacy and critical thinking go hand in hand (Buckingham, 2003; Jenkins, et al. 2009; Masterman, 2001). “Media literacy is, first and foremost, a critical thinking skill that is applied to the source of most of the information we receive” (Silverblatt, 2008, p. 4). Reese (2012) noted that,

To the extent that it involves questioning, reasoning, discerning the strength of claims, evaluating evidence, and taking multiple perspectives, media literacy necessarily is critical thinking, a process we presume leads to better informed citizens, who can evaluate the strength of political arguments and detect faulty logic as they make decisions” (p. 67).

De Abreu (2011) described media literacy as an extension of critical thought, which incorporates analysis, evaluation and understanding. Media literacy teaches metacognition, creativity and intellectual curiosity. Media literacy education can help students develop critical thinking skills (Arke, 2005), and critical thinking is a construct that “may be valuable in the validation of any media literacy scale” (Arke & Primack, 2009, p. 56).

McManus (2012) argued that critical habits such as paying attention to the source of information, the source’s motivation, the evidence provided to back up claims and the logic used can help users reduce their susceptibility to misinformation. This form of “skeptical knowing” involves asking critical questions about how sources and the evidence they present are vetted (Kovach & Rosenstiel, 2010), and adopting a critical stance when reading, viewing or thinking about media representations (Semali, 2005).

### **How Theory Has Shaped the Constructs of News Literacy**

Theory referenced above has shaped the concept of news literacy, and the constructs of critical thinking ability and awareness in a variety of ways. News literacy is based on the premises that critical thinking is central to the mission of higher education and that a journalism education should not just include skills training but also a critical

analysis component. The premise of this study is that news literacy educators should have a deep understanding of how students access, filter and evaluate news using their typical online routine, concepts emphasized by the cognitive theory of media literacy, active audience theories and critical thinking theories.

The construct of critical thinking ability is based on the foundational definitions of critical thinking, as summarized by Ennis (1989) and Facione (1990). Critical thinking theory, as applied to media literacy, focuses heavily on analysis and evaluation of media texts. Potter (2004b) and Graber (1984) contributed the idea that critical thinking must be applied when filtering information – that is, determining which messages to pay attention to and which to ignore. This study considered higher-order thinking, as outlined by Bloom (1956) and demonstrated in some methods of accessing, filtering and evaluating news, as an indication that students were discerning news consumers.

Theory has shaped the construct of awareness in several ways. Self-awareness is central to the concept of metacognition – awareness of one’s learning or thinking process. Potter’s (2004b) cognitive theory of media literacy is predicated on the idea that media consumers have to be actively aware of their media consumption habits and avoid falling back on automatic routines. Paul (1985) emphasized the importance of understanding students’ cognitive processes, and Bloom (1956) identified the cognitive domain of learning. Scholars who contributed to active audience theories sought to understand how people process and evaluate media messages – self-awareness as applied to media literacy. Thus, theories of cognition and the notion of active audiences helped shape this study’s treatment of self-awareness.

Theory also helped shape the second part of the awareness construct, awareness of factors that may affect the credibility and diversity of news accessed. Specifically, critical thinking theories help explain why knowledge of specific concepts, strategies and evaluation criteria is necessary in a news literacy context. As Facione (1990) explained, exercising critical thinking skills in certain contexts demands domain-specific knowledge, including specific methods and techniques used to make reasonable judgments in those contexts. In the case of this study, the context was accessing credible news in an open-web setting, defined as an online environment in which users face few restrictions to what they search. The domain-specific knowledge included concepts such as the silo effect, news personalization, search engine optimization, promoted posts and trending topics, as well as search strategies and evaluation criteria that may affect the credibility and diversity of news accessed. Knowledge of these concepts, strategies and criteria allow students to make reasonable judgments about the content they encounter.

### **News Literacy Pedagogy**

Just as no single definition of news literacy or media literacy has surfaced, no consensus has been reached about best teaching practices. Instruction can focus on media analysis, media creation, media interaction or a combination of the three (Fleming, 2010). Media literacy education focuses on developing students' habits of inquiry and ability to value good reasoning (Scheibe & Rogow, 2012). Meyrowitz (1998) suggested that a curriculum framework for media literacy should be built around media content literacy (the ability to discern the quality of information), media grammar literacy (understanding of the web's distinct language and form) and medium literacy (how messages are conveyed and presented).

News and media literacy pedagogy stresses active participation from students (Masterman, 2001). Media education has “a distinctive epistemology in which knowledge is not so much deposited upon students as actively created by them through a process of investigation and dialogue.” (p. 46) News literacy lessons should stress open-mindedness and ask students to be aware of their assumptions (Scheibe & Rogow, 2011).

### **Constructivist Pedagogy**

Fleming (2010) found that news literacy lessons are more powerful when students were able to choose the media content they deconstruct. In her exploratory study, students in one course examined news media texts of their choosing and emerged on the whole with an improved ability to critically examine and question news compared with students in another course who analyzed prescribed media texts. Instructor observations and student feedback suggested that news literacy education should follow constructivist pedagogy, which holds that knowledge is best constructed from the learner’s existing knowledge. This approach utilizes students’ media knowledge and media habits to “help them better understand the full spectrum of media tools, texts and practices” (p. 129). Constructivists view students as active in their choices of media both as consumers and producers (Hobbs, 2011). Potter (2004a) made the case that the onus should be on the individuals to make choices and interpretations.

Constructivist learning theory persuaded media literacy educators and practitioners to integrate theoretical and critical frameworks into a document that provides common ground for the field (Hobbs, 2011). The Core Principles of Media Literacy Education in the United States emphasizes the need for active inquiry and

critical thinking about media messages, and the use of skills, beliefs and experiences to construct meanings from these messages (Hobbs, 2011).

These principles attempt to reconcile the differences that exist between the 'protectionist' and 'empowerment' wings of the media literacy community, situating media literacy within both literacy education and constructivist learning theory and emphasizing its role in supporting active democratic citizenship, as opposed to simply creating informed consumers of mass media and popular culture (Hobbs & Jensen, 2009, p. 7).

Fleming (2012) examined Stony Brook University's news literacy course, which adopts the constructivist philosophy. Students begin the course by refraining from following any news for 48 hours and reflecting on their experience. During the semester they are regularly asked to submit stories that matter to them and identify what news literacy concepts the stories illustrate. The final essay requires students to select a news topic of interest to them, track it for a month and explain how they used news literacy skills and concepts to reach a conclusion or make a judgment on the issue (Fleming, 2012). As Fleming noted,

Almost every assignment, lecture, and recitation challenged students to reflect on an experience, develop an argument, and apply at least one course concept to the analysis of news or the analysis of how they consumed and interpreted news. This made the pedagogy highly personal (p. 77).

## Chapter 3: Assessing News Literacy

This chapter identifies the tenets of assessment, as well as the assessment objectives of this study. To be meaningful, assessment of news literacy must target critical thinking ability and awareness that flow from its theoretical concepts, including the cognitive theory of media literacy and the constructivist learning theory. The extent to which previous studies have addressed these assessment objectives and how this study extends that literature is explored.

This study's macro-level objective was to conduct a holistic assessment based upon clearly defined constructs that measured aspects of students' news literacy before exposure to educational intervention. Among the more specific objectives were to measure students' news consumption habits, interests in news topics, critical thinking strategies and criteria used to access, filter news and evaluate news in an open-web environment, and awareness of how their choices shape what they consume.

### **Construct Validity**

News and media literacy are typically broadly conceived to encompass the constructs of critical thinking and civic engagement, but these terms are not always thoroughly explicated, undercutting the ability to compare study results. "The range of ad hoc approaches for assessing the effects of media education, employing different definitions and measures and failing to establish one or more types of validity, makes it difficult to compare results across studies or time" (Ashley, Maksl, & Craft, 2013, p. 9). Before determining how to assess students in news and media literacy courses it would be helpful to agree upon the constructs to measure.

Construct validity is the demonstrated ability of a test or instrument to measure the variables or constructs that it proposes to identify or measure. Validity is often based on the accumulation of correlations from previous studies using the instrument. Construct validity begins during the planning and pilot testing stages of an experiment when researchers identify the applicable constructs (Cook & Campbell, 1979). Researchers must then operationalize all terms and identify the variables in their study. Careful pre-experimental explication of constructs is critical so that definitions are clear to both the researcher and the public (Cook & Campbell, 1979).

To ensure construct validity, researchers should decide which measures or manipulations to use to index the constructs of interest (Cook & Campbell, 1979). Theoretical constructs are critically important because educational standards derive from constructs, and curriculum and instruction derive from standards (Afflerbach, 2012). In other words, all tasks and learning outcomes should be based on constructs. Researchers should be able to answer the questions: What is most importance to assess? And is the proposed assessment actually measuring what the researcher intended to assess?

This study attempted to address criticisms made of previous news and media literacy studies by more clearly defining the constructs that guide selection of the assessment procedures to be employed. Chapter 2 laid out the constructs of news literacy: critical thinking ability and awareness.

### **Holistic Assessment and Ecological Validity**

The purpose of assessment is to measure performance in a holistic way (Afflerbach, 2012). Assessment is increasingly considered to be part of an integrated, collaborative learning experience (Suskie, 2009). This study gathered data about where



and how students find news, what platforms they prefer, and what topics they gravitate toward in order to measure the news consumption habits and interests of the age group targeted by news literacy courses. It then measured aspects of students' news literacy by testing their self-awareness, awareness of relevant concepts and ability to apply cognitive strategies and evaluation criteria in tasks that reflect how they might typically access online news.

This study used both quantitative and qualitative methods to assess news literacy. Many studies of literacy attainment rely solely on quantitative methods – a mixture of surveys and experiments (MacMillan, 2009). Such research tends to compare student results on skills tests before and after exposure to an experimental treatment, which is typically literacy instruction. Analysis of students' scores on pre- and post-tests measures change in skill attainment over time but does not identify the reasons for improvement, including strategies that illustrate higher-order critical thinking. Qualitative interviews may be used to ask students retrospectively how their literacy skills have improved rather than to chart their growth as it happens in a more scientific manner. “Within the assessment literature, there is a steadily growing discomfort within the limits of prescriptive, rather than descriptive approaches” to testing students' literacy (MacMillan, 2009, p. 133).

Fox (2005) argued that media literacy assessment needs new and hybrid methodologies. “Media literacy researchers have developed very few research innovations, other than occasionally adapting case study approaches to media consumers” (p. 257). Qualitative approaches are particularly useful in helping to make sense of people's thinking about their own experiences with media (Fox, 2005). Research

demonstrates the effectiveness of using direct observation to track students' literacy skills (MacMillan, 2009). Verbal reports, also known as think-aloud protocols (discussed in the following chapter), are a widely-used method of gathering detailed information about the cognitive and affective aspects of reading.

Triangulation, or considering information from multiple data sources, is typically needed when looking at verbal reports (Afflerbach, 2002), as well as when trying to get a complete picture of literacy attainment (Livingstone et al., 2008). Hargittai (2002) suggested that a mixture of survey instruments and in-person observations can “yield the type of rich data set that is necessary to understand in depth the differences in people's information retrieval behavior online” (p. 1239).

Assessing students' performance on tasks that reflect their typical news searches was an effort to strive for ecological validity, the concept that the behaviors tracked in a study should approximate behaviors that occur in a natural setting. Adhering to the principles of constructivist pedagogy, this study gave students agency in the selection of the news articles that they were asked to evaluate for credibility. This differs from the common practice in assessments of news and media literacy that require students to analyze content selected by the teacher or researcher. In reality, people read news that they select far more often than they read news that others have dictated they should read. Individuals may receive a news article or a link to it through social media or “push” technology, but ultimately they choose what news to consume.

Studies that gauge students' news literacy by their ability to correctly answer questions about message meaning, intended audience and credibility of prescribed media content arguably lack ecological validity. Such measures do not always give students a

chance to demonstrate what news choices they make or their critical thinking skills used to access and select news. Pingree (2011) criticized experiments in which students read a news story selected for them as artificial in design given that “in the real world, people self-select news stories to attend to, making effects on high-interest readers arguably more externally valid than those on low-interest readers” (p. 41).

This study was based on the premise that a combination of assessment methods allows for a more holistic measure of news literacy than any one method, and that assessing students’ typical news search routine increases ecological validity.

### **Application of Assessment Methodologies to News Literacy**

This study was a formative assessment of students prior to formal news literacy training.<sup>i</sup> Formative assessments can help educators establish a baseline for students that can inform future instruction (Afflerbach, 2012). The more commonly used type of learning assessment is summative, typically conducted at the end of a course to measure what students have learned and whether learning outcomes were met. News literacy studies are typically summative, focusing on what students have learned at the summation of a course, unit or presentation. News literacy studies often measure students’ ability to critically analyze a series of messages before and after being exposed to a media literacy course (Mihailidis, 2009; Feurstein, 1999; Duran et al., 2008; Hobbs and Frost, 2003; Weber, 2012). Students who have taken such a course are compared with a demographically similar control group of students who did not take the course, and post-test results are used to examine the effects of exposure to media literacy education.

Mihailidis (2009) examined how media literacy education affects students’ media comprehension, evaluation and analysis skills. In the multi-year study of 239

undergraduates, half of the students in experimental groups enrolled in a media literacy course viewed television, print and radio messages and completed a skills test at the start and end of the semester. The other half of the student sample took only the test at the end of the semester. Results were compared to a control group of students not enrolled in the media literacy course but who took the skills test at the end of the semester. The results suggested that students enrolled in the media literacy course increased their ability to comprehend, evaluate and analyze media messages but did not demonstrate an understanding of or support for the media's role in democracy (Mihailidis, 2009). A separate study found that students exposed to a media literacy course demonstrated improved media analysis and critical thinking skills (Feuerstein, 1999). Yet another study found that students who completed a holistic media literacy course were significantly more aware of media structures, including issues of ownership and control, than students who did not complete such a course (Duran et al., 2008).

Hobbs and Frost (2003) found that students who completed a yearlong English media and communication course that incorporated extensive media analysis of print, audio and visual texts were better at identifying points of view in news articles, the purposes of messages and what information is omitted as compared to students who did not complete the course. In a study at Stony Brook University that involved multiple sections of a news literacy course, some students who completed the course fared better than the control group at deconstructing news stories while in other cases there was no measurable difference between the two groups (Weber, 2012).

News literacy assessments have also measured the effects of exposure to short courses, units within a single class meeting or presentation (Krueger, 2013; News

Literacy Project, 2012; Vraga, Tully & Rojas, 2009). The Poynter Institute conducts pre- and post-assessments of users of NewsU, which offers online educational seminars and self-directed modules, including one on news literacy (Krueger, 2013). A similar assessment conducted by The News Literacy Project measures high school students exposed to a news literacy unit lasting several class periods (News Literacy Project, 2012). A pre- and post-assessment of students who completed a blended unit through the News Literacy Project found that course graduates improved their ability to identify news literacy skills such as distinguishing between news and advertising, and between fact and fiction. They also improved their ability to identify questions to assess credibility of information such as who created the information and naming/citing sources.

Vraga et al. (2009) used an experimental design to measure whether news literacy training designed to heighten awareness of the news process reduced hostile interpretations of media content. Students were exposed to a short media literacy presentation about the news process, how audiences interpret news, and the need for readers to avoid allowing personal preference to influence their understanding of news. Students exposed to a news literacy presentation were less likely to perceive a story on a controversial issue to be biased. However, there was no support for the hypothesis that exposure to this unit would increase students' trust in the media.

Ashley, Lyden, and Fasbinder (2012) addressed the dearth of news literacy studies that are either qualitative or gather baseline data about students before any educational intervention.

Rather than attempting to illustrate the effectiveness of media literacy education based on scholars' or educators' prescribed treatments, we simply sought to gather baseline qualitative data that would offer insights into how students see the world of media messages and how they construct meaning from it (p. 239).

The researchers further noted that “because these students had no specific college-level training in media literacy, our study was an analysis of what critical thinking skills they already possessed” (p. 231). The study used a grounded theory approach to analyze responses by first-year college students to an advertisement, a public relations message and a news report. Students were asked open-ended questions about each message. The study found that students with no prior media literacy education were “poorly versed in analyzing and understanding a variety of media messages” (p. 239). Students had a particularly difficult time articulating the purpose, message and sender of a television news report. They focused largely on the “superficial” components of the media messages and did not demonstrate advanced critical analysis skills. Students “see the world of media messages as simple and straightforward and to be taken at face value” (p. 239).

### **Online News Users’ Habits and Interests**

In the tradition of active audience research, this study viewed online news users as individuals who draw upon a variety of experiences and their own beliefs to make choices about what content to access and how to evaluate that information. Among this study’s objectives were gauging students’ use of technology, news consumption habits and interest in specific news topics.

News and media literacy studies often collect and report basic demographic data of its participants, such as age, gender, race and year in school. Vraga et al. (2009) collected detailed information about students’ political affiliations in their study of how students of varying political ideologies are affected by a news media literacy presentation. Researchers (Weber, 2012; Mihailidis, 2009; Krueger, 2013; News Literacy

Project, 2012) have profiled online news users through indicators such as news consumption routines, favored platforms for reading news and use of technology. Stony Brook University asked news literacy students about their news diets (Weber, 2012). The News Literacy Project asked students how often they posted comments to blogs, posted videos online and corrected entries on Wikipedia (News Literacy Project, 2012).

This study surveyed students' interest in specific news topics and asked lab participants to search for news in areas of high interest in an attempt to ensure that they were motivated during the tasks. As noted above, Pingree (2011) found that participants may be less motivated during experiments in which they are asked to analyze stories of no interest to them. Motivated readers have been found to be more willing to engage in effortful processing of material (Cacioppo & Petty, 1982). Metzger (2007) argued that the degree to which users scrutinize online information depends on their ability to evaluate the message and their motivation and purpose for seeking information. Users who are not motivated in a search to find high-quality information may settle on a source based upon surface-level qualities such as site design, whereas highly-motivated users will likely take a more rigorous approach to credibility assessment.

### **Accessing News**

Observation – the monitoring of student learning or performance – is a pillar of assessment (Afflerbach, 2012). Critical thinking assessment can take many forms, among them observing a person performing an activity (Facione, 1990). This study observed students as they accessed news online through a computer in an open-web setting. Previous news and media literacy studies have typically not examined decisions students make about where to start a news search, and how the search process may affect the

credibility or diversity of the news accessed or influence an individual's assessment of content credibility.

However, research in information science, education, communication and sociology has more often explored users' online information-seeking behaviors. Hargittai, Fullerton, Menchen-Trevino, and Thomas (2010) found that among first-year college students, going to a specific search engine like Google or Yahoo was regularly the first step in the information-seeking process. When using a search engine, many students clicked on the first search result (Hargittai et al., 2010). While students said they understand the potential drawbacks of search engines, including clutter and dubious sources, they still gravitated toward them because of their ease of use (Fast & Campbell, 2004).

Users largely trusted search engines to be unbiased sources of information, although the most-experienced among them displayed slightly more skepticism. Roughly one-third of users were aware of paid or sponsored content that appears on the sites, while only one-sixth said they can consistently distinguish between paid and unpaid results (Fallows, 2005). An eye-tracking experiment found college students to be very trusting in Google's ability to rank results by their true relevance to the query. Participants overwhelmingly chose top entries, even if their abstracts seemed less relevant (Pan, Hembrooke, Joachims, Lorigo, Gay, & Granka, 2007).

A 2009 longitudinal study of information-seeking found that college students relied heavily on strategies typical of high school or younger students unless they were forced to do otherwise. Students largely stuck to keyword searches, even when they proved ineffective. If a search failed they would turn to another search engine or type of



resource, but tended not to use a new technique or strategy. Students also lacked confidence in evaluating the usefulness of resources (Warwick, Rimmer, Blandford, Gow, & Buchanan, 2009).

Rieh and Hilligoss (2008) explored students' natural information-seeking activities by asking them to record a web site search they conducted each day for a period of 10 days. Through interviews and screen captures, the study found the students able to articulate why they decided to begin their searches at a certain point of entry. They tailored information-seeking strategies based on prior experiences, such as gravitating toward a source they had used before. Information-seeking strategies included starting at a trusted place (often a word-of-mouth referral from a person they trust) and compromising information credibility for speed and convenience (Rieh & Hilligoss, 2008).

Tewksbury, Hals and Bibart (2011) explored information-seeking behaviors by asking participants to spend up to 10 minutes reading news on a national news site. The study found that when selecting news, individuals either focused on specific content defined by individual interests and needs (a group termed selectors), or used the news media to obtain information on a broad range of topics across news domains (a group termed browsers). A different study found that users may access news to acquire general information or to find specific items of interest (Lavie et al., 2010).

This study built on existing research about how young people seek online information. It extended the literature by investigating how students in an open-web setting typically access news of interest to them. Using the information-seeking classifications outlined by Tewksbury et al. (2011), this study asked students to perform

news search tasks that measured both news browsing routines across news sites and news selection about a specific topic. Obtaining qualitative data was an important element of this study's validity.

While survey data are helpful in allowing us to identify overall patterns and quantifying aspects of users' online abilities and perceptions, more nuanced qualitative data can offer valuable additional information when trying to glean an accurate picture of how young adults evaluate online materials (Hargittai et al., 2010, p. 478).

### **Filtering News**

This study utilized verbal protocols and interviews to elicit data about students' thought processes as they narrowed down the possible choices for news – and eventually made credibility evaluations. Assessments should measure more than just the answers students provide; they should also reveal the process students employ to make their decisions (Afflerbach, 2012).

Online news is a rich area of study for cognitive processing decisions during the news filtering process given the need to quickly judge what information to pay attention to and what to ignore, and then evaluate the information found.

Online news is a domain ripe for exploring interactive user experiences through the lens of user engagement. It represents a rich environment for investigating a range of behaviors (e.g., reading, searching and browsing), cognitions (e.g., deciding what to read, evaluating the content or way in which it is delivered) and affective (e.g., motivations) elements of users' experiences. (O'Brien, 2011, p. 3)

In online environments (including but not limited to news), reader-text interactions are complex and demanding (Afflerbach & Cho, 2009). Readers encounter a constant stream of information and face the challenge of controlling uncertainty as they move from the text they are currently reading into “a series of unknowns” that may be unhelpful and unnecessary to the task at hand (Afflerbach & Cho, 2009).

Internet and hypertext readers appear to use strategies that address the considerable task of reducing unknowns as they read. In contrast to more traditional one reader/one text interactions, these readers must work to identify and move through a universe of many possible texts. They must ignore distractions, anticipate and predict meaningful moves with minimal text information. We believe that Internet and hypertext reading include a new generation of reading strategies that clearly reflect the role of the reader in the new architecture of reading (Afflerbach & Cho, 2009).

Online users often scan, choose and select hyperlinked content, a process that may occur several times during an online visit. “This ritual and the underlying mental processes involved fundamentally shape the experience of receiving news online” (Wise, Bolls & Schaefer, 2008, p. 69). Wise et al. (2008) found that users expend more cognitive resources when selecting from a longer (rather than shorter) list of hyperlinked stories.

O’Brien (2011) asked participants to browse the same news website and select three stories to discuss at a social gathering. In post-task semi-structured interviews, users said they narrowed down their options based upon factors such as the novelty of headlines, and the interactivity and aesthetic appeal of the content. Afflerbach and Cho (2009) found that among the strategies used to filter information online are generating key words related to the topic, and scrutinizing links to judge the usefulness and significance of the information before accessing it.

The process by which people filter information in an open-web setting may also depend on the nature of the task. Kim and Allen (2002) gave college students a range of web searching tasks designed to generate various levels of search activity and different search outcomes. The study found that “interactions between cognitive ability/problem-solving style and task variables were found to influence the number of searches completed, the number of sites seen, the number of keyword searches and the number of bookmarks made” (p. 118).

This study built on existing research by assessing students' cognitive processes as they decided what news items to consider. It tracked how students managed information overload by reducing unknowns, ignoring distractions and anticipating which items would be useful for completing the task at hand.

### **Credibility Evaluation**

Credibility of information on the web is often difficult to decipher because of the low barrier of entry to publishing online, a lack of gatekeepers to monitor quality and the convergence of information genres such as news and advertising (Flanagin & Metzger, 2007). Critically evaluating information on the internet takes on a heightened importance because of the flattening effect that seemingly places all content on an equal playing field. The burden of credibility assessment and quality control has shifted from professional gatekeepers to individual information seekers (Metzger, 2007), as illustrated by the quote cited at the outset of this dissertation.

As noted above, scholars commonly ask students to evaluate the credibility of news stories that are selected for them, typically from a variety of mediums (Ashley et al., 2012; Ashley, Poepsel & Wills, 2010; Arke & Primack, 2009; Mihailidis, 2009; Duran et al., 2008; Hobbs & Frost, 2003; Feurstein, 1999). This study contributes to existing research by asking students to evaluate news that they have identified during online searches.

Studies consistently show that students do little to verify online information, including but not limited to news. Students typically find online information more credible than do adults and are more likely to take it at face value (Flanagin & Metzger, 2000). Information originating from news organizations is typically assessed as more

credible than other types of online information because of the assumed editorial rigor and fact-checking procedures (Flanagin & Metzger, 2000).

Without being primed, high school and college students display a low level of proficiency in identifying the source of information and weighing source credibility (Britt & Aglinksas, 2002). They typically access news that is convenient and they commonly report relying on sources that they do not consider credible (Jarvis, Stroud, & Gilliland, 2009). Identifying credible information is challenging for young web users because they are less cognitively developed than adults (Eastin, 2008) and are at greater risk for falsely accepting a source's self-asserted credibility (Flanagin, & Metzger, 2008).

Credibility can be measured in a variety of ways. Media literacy researchers often consider source credibility, medium credibility and message credibility (Armstrong & Collins, 2009). Source credibility includes presumed credibility (arising from the assumptions of the perceiver), reputed credibility (based on source labels, such as "doctor" or "professor"), surface credibility (based on a user's cursory inspection of superficial characteristics) and experienced credibility (based on a user's firsthand experience with a source over time) (Tseng & Fogg, 1999). Gaziano and McGrath (1986) developed a seminal 12-item news credibility scale that includes criteria such as fairness, bias, accuracy and trustworthiness. Newhagen and Nass (1989) developed a similar credibility index including fairness, accuracy, trustworthiness, concern about the public interest and concern about the community. Kiosis' (2001) credibility scale considered factualness, trustworthiness, concern about making profits, consideration of people's privacy, and concern about community well-being. Flanagin and Metzger (2000) gauged

how credible students find various media channels based on the dimensions of believability, accuracy, trustworthiness, bias and completeness.

Digital literacy (not specific to news credibility) evaluations typically measure the ability to assess information online based on accuracy, authority, objectivity, currency and coverage – each considered to be indicators of web site credibility (Metzger, 2007). Credibility indicators also commonly include authorship, accessibility, presentation of information and whether information can be corroborated across several sources (Francke, Sundin & Limberg, 2011; Lackaff, 2008). In an online experiment in which thousands of people evaluated a range of web sites (including news sites), Fogg (2003) found that credibility judgments usually were based on site presentation, information on the page, the site operator or source's motives and the reputation (including name recognition). Features of the information itself and the source of the information factored into users' credibility assessments (Metzger, 2007).

Credibility assessment is an ongoing process in which users rely on different processes and factors depending on context (Metzger, 2007; Rieh & Hilligoss, 2008). For instance, an experiment found that a news story embedded in an uncivil partisan blog post appears more credible than the same news story posted on its own because the readers compared the embedded story to the uncivil content that surrounds it (Thorson, Vraga, & Ekdale, 2010). Perceptions of credibility may be situational and depend on an individual's relationship to not only the medium but the source of the message and its content. Familiarity with the site genre (such as a news site) as a source of a certain kind of information is an important component of credibility perceptions (Flanagin & Metzger, 2007). A 2012 survey found that technological characteristics such as whether a site has

well-designed hyperlinks, presents related news next to an article and allows the user to easily share information with others are important factors in evaluating the credibility of index-type news sources like Google and Yahoo (Chung, Nam, & Stefanone, 2012).

As noted above, little work in online credibility assessment has considered how the information-seeking process figures into the final evaluation of content people encounter (Hargittai et al., 2010). The methods by which respondents arrive at content are typically ignored. Participants are often asked to evaluate features of a mock Web site without any regard for how they might come across it in the first place. Hargittai et al. (2010) found that the information-seeking process (not specific to news) is often as important as verifying the results in terms of assessing the credibility of online content. Therefore, instead of asking students to evaluate a hypothetical web site in an experimental setting, they asked students to navigate the open web. This approach allowed them to observe and analyze users' actions from initial steps of the information-seeking process through the entire search process of obtaining a response to a question and evaluating the content. As the researchers noted,

Our methodology made it possible for us to uncover a crucial part of the puzzle of online credibility assessment heretofore largely absent in this literature: the important role that search context plays in what content many users deem trustworthy... That is, rather than simply evaluating content based on the features of the destination Web site, users put considerable trust in the online equivalent of traditional gatekeepers: search engines (Hargittai et al., 2010, p. 470).

Credibility assessment should also consider the information users access and users' motivations for seeking that information (Metzger, 2007). "Researchers have suggested myriad factors that may play into credibility assessments, but only a few studies have examined what criteria people actually employ" (Metzger, 2007, p. 2081).

Researchers should go beyond self-reported information and gauge users' actual information-seeking behavior. "Future online credibility research should be as anthropological, naturalistic, and unobtrusive as possible" (Metzger, 2007, p. 2087).

Cognizant of Metzger's (2007) advocacy of naturalistic studies that go beyond self-reported information, Hargittai et al.'s (2010) approach of observing and analyzing web users' actions from the initial steps of the information-seeking process through the credibility evaluation process, and O'Brien's (2011) use of a simulated task scenario and post-task semi-structured interviews, this study examined how the information-seeking process may affect the news consumed and factor into students' final evaluation of news sources (source credibility) and news items (message credibility). Examining how people typically arrive at the sites where they consume news online provided information that is useful to those interested in promoting the consumption of credible news. In the study, students were asked to find news they considered credible but were not given a definition of credibility – or asked to define credibility – in order to focus attention on how they put into practice credibility evaluations in an open-web setting.

### **Awareness**

As described in the previous chapter, awareness in this study included participants' awareness of their own online news search actions and of factors that may affect the credibility and diversity of news accessed. Measurement of the level of awareness is important because people who are more conscious of their presence, attitudes, and beliefs, and self-focused on the difference between a preferred standard and current behavior, may have more motivation to reduce that difference (Gibbons, 1990).



The self-aware person can be induced to conform to internalized standards of behavior (Goukens, Dewitte, & Warlop, 2010).

Self-awareness is evident in readers who use strategies, defined by Afflerbach, Pearson & Paris (2008) as “deliberate, goal-directed attempts to control and modify the reader’s efforts to decode text, understand words and construct meanings of texts” (p. 368). While cognitive strategies require effort and attention, skills are defined as “automatic actions that result in decoding and comprehension with speed, efficiency, and fluency and usually occur without awareness of the components or control involved” (p. 368). The key difference between skill and strategy is whether the reader’s actions are under automatic control – similar to Potter’s (2004a) concept of automaticity – or deliberate control.

Strategic readers approach online reading tasks by generating a focused plan for reading and are willing to shift their goals or strategies to accomplish their original purpose for reading (Pressley & Afflerbach, 1995; Coiro, 2011b). They are, in other words, aware of what is needed to complete a task and what strategies they should employ. “A reader’s level of metacognitive awareness about which strategies are best suited to locate, critically evaluate, and synthesize diverse online texts is likely to foster a deeper understanding of the texts they encounter on the Internet” (Coiro, 2011b, p. 108).

Awareness of factors that may affect the credibility and diversity of news accessed are often assessed through tests given before and after exposure to an instructional treatment (Krueger, 2013; News Literacy Project, 2012; Weber, 2012; Ashley et al., 2010). The Poynter Institute gathered self-reported information about participants’ knowledge of news media literacy concepts before enrolling in and after

completing online courses (Krueger, 2013). The News Literacy Project obtained information based on a range of knowledge-based questions about what freedoms are not protected by the First Amendment, as well as how to define verification of information, anonymous sources and media bias (News Literacy Project, 2012). The Center for News Literacy conducted a pre- and post-test of students' ability to define terms such as "verification" and "reliability," identify the difference between audience and media bias, and recognize the difference between journalism and other kinds of information (Weber, 2012).

Ashley et al. (2010) explored how increased knowledge of media ownership affects judgments of news credibility. In this between-subjects experiment, some students read nature poems before evaluating news articles and others read educational material about media consolidation and ownership. The experiment did not measure the students' prior knowledge about media ownership but rather tested whether exposure to this information affected students' subsequent news credibility evaluation. Results showed that exposure to literature about media ownership may promote slight increases in critical responses to news media. Ashley, Maksl, and Craft (2013) developed an attitudinal scale that focused on news literacy and compared the new scale to a knowledge-based index about the structure of the U.S. news media system. Among college students, the knowledge-based index was a significant predictor of knowledge about topics in the news, while the attitudinal scale was not. In a later study involving a phone survey of 500 teenagers, the researchers found that news literate teens are defined by their intrinsic motivations toward news consumption and were more skeptical of the news content they

receive and more knowledgeable about current events. They were also likely to be more selective and proactive in choosing what news to consume (Ashley et al., 2013).

Few studies have looked specifically at students' awareness of digital media trends and terminology. When asked the open-ended question, "What is search optimization," public relations students most commonly responded that SEO uses keywords and hits, or that it improves and optimizes search rankings. While most students knew the basic definition of SEO, 18% of students did not have any answer, and researchers noted that many responses to the question were not completely correct (Moody & Bates, 2013).

This study extended existing literature by measuring students' awareness of news literacy concepts and of their own online news search habits. Students who access news online through sites that in some manner filter and personalize news need to understand how the process of doing this can affect the credibility and diversity of what they consume, and how their own search habits and evaluation criteria shape the news they consume.

## Chapter 4: Method

### **Design**

This exploratory study employed a mixed-methods approach to investigate how college students access, filter and evaluate news, and how aware they are of how their choices when accessing news online shape what they consume. Data sources included an online survey of all participants, followed by concurrent think-aloud protocols and semi-structured interviews with a subset of participants who took the survey. The online survey gathered baseline data about demographics, participants' preferred mediums and platforms for accessing news, their news consumption habits and interest in news topics. It also served to create a pool of potential lab study participants from which to randomly draw. Concurrent think-aloud protocols elicited contemporaneous descriptive data and explanations about participants' search and filtering strategies, and criteria for evaluating news outlets and items. Semi-structured interviews gathered data about the strategies and criteria not mentioned contemporaneously, and measured participants' ability to identify how their choices when accessing news online can shape what they consume.

### **Sample**

The convenience sample of college students on the University of Maryland campus was selected because a primary objective of the study is to isolate the critical thinking concepts – found in search strategies, evaluation criteria and awareness of how choices when accessing news help shape what is consumed – that may require more attention in college news/media literacy courses. The researcher sought a diverse pool of students who had little exposure to news literacy instruction. The vast majority of study

participants (80.7%) were students in eight undergraduate courses: three in communications, two in journalism, and one each in sociology, history and English. Combined, these courses had 665 seat openings.<sup>ii</sup> These courses were selected because they do not require students to evaluate the credibility of news media content, and because they attract students of varying ages and academic disciplines. The minority of survey respondents (15.2 %)<sup>iii</sup> included students from three student groups and four interdisciplinary living-learning programs.<sup>iv</sup> These groups and programs were also selected because they attract a diverse pool of students. Eighty-one percent of participants found out about the survey through the researcher's class visit, 15% through a listserv and 4% through other means such as word of mouth.

### **Instrumentation**

The instruments included: (1) an online survey given to all participants, (2) concurrent think-aloud protocols provided by students in the lab portion of the study, (3) computer screen captures recorded as students conducted the news search and (4) semi-structured interviews conducted following the collection of think-aloud protocols.

#### *Online Survey*

The 18-question online survey (Appendix A) was conducted through Qualtrics, an online platform that is linked directly from the University of Maryland's website. The survey measured demographics, students' preferred mediums and platforms for accessing news, news consumption habits and interest in news topics. Participants were provided with the study's broad definition of news – "information about current events or issues" – before the first survey question that used the term.

To measure demographics, the instrument included eight multiple choice questions about age, gender, academic major, media device ownership and the ways in which participants learned of the study. To measure preferred mediums and platforms and news consumption habits, the instrument included seven fill-in-the-blank and Likert scale questions such as, “Please enter the names of up to three websites and/or apps that you most often begin your news search with,” “On a typical work or school day, how often do you consume news on a computer using each of the following?” and “Please indicate the extent to which you agree or disagree with the following statements: “I like to actively search for news,” “I like to receive news from other people” and “I like to rely on technology to send me news.” Survey responses provided information about how much time participants typically spend searching for news on a daily basis, and what news outlets and sources<sup>v</sup> they use when doing so on a computer. They also revealed the extent to which participants customize their news, and whether they rely primarily on information “pushed” toward them through e-mail, texts or social recommendations or whether they are “pulled” to seek out news more actively.

To measure interest in news topics, the instrument included one Likert scale question, “Please indicate your level of interest in news about the following topics,” with choices such as arts, business/economy, politics, crime etc. Finally, two questions asked whether participants were interested in being considered for a random gift card drawing and the random lab session drawing.

The survey responses of each potential lab participant revealed the news topic(s) of greatest interest and where news searches most often began. During the lab task each participant was asked to search for news in the areas of highest indicated interest through

the sites or portals they reported as most often using when seeking out news online. This was done to make it as likely as possible that participants would be motivated during their search and as familiar as possible with the sites visited. Additionally, this was done to reduce participant skewing of the process to meet perceived researcher expectations. By asking participants to visit news sites they favor, this study aimed to overcome one of the main limitations in O'Brien's (2011) study: Only four of her 30 participants listed the news site used in the study as a preferred source. As O'Brien noted, many participants may have been either unfamiliar with or not fond of the site selected for the study, potentially limiting some users' engagement and researchers' inferences from the data.

#### *Think-Aloud Protocols*

Participants' online news search strategies and evaluation criteria were assessed with verbal reports, which provide a record of what participants do and think during tasks (Afflerbach & Cho, 2009). In think-aloud protocols, the type of verbal report used in this study, participants describe the mental process of completing a task (Yang, 2003). Data reflects exactly what a subject is thinking at any moment, although there is not always an exact relation between people's words and their thoughts (Pressley & Afflerbach, 1995). Researchers can, however, learn about students' strategies, mindsets and motivations (Afflerbach, 2002). Think-aloud data helps to uncover typically covert cognitive processing such as decision making and reduce assumptions in analysis of observational data (Young, 2005).

Afflerbach & Cho (2009) wrote that they are encouraged by the use of the verbal reporting methodology to explore newer literacies, including strategic processing in Internet and hypertext environments such as searching online for news.

The methodology is well-suited to the task of providing descriptions of strategies of traditional reader-text interactions as well as more recently investigated acts of literacy involving readers with multiple texts and readers reading in Internet environments (Afflerbach & Cho, 2009).

Young (2005) considered the approach “particularly important while we are in the process of trying to gain insight into a relatively new phenomenon” (p. 31).

In concurrent think-aloud protocols, participants verbalize what they are thinking and doing as they begin, work through and complete a task. While retrospective protocols allow participants to complete a task silently and proceed at their typical pace, they may produce distorted or incomplete accounts of their thoughts while performing the task. Participants may edit their thoughts after the fact and forget specific things that occurred during a task (Van Den Haak, De Jong, & Schellens, 2003). Young (2005) found that talking aloud appeared to have little impact on participants’ task performance. Therefore, the concurrent think-aloud method used in conjunction with post-task semi-structured interviews assisted by screen captures of the task, described below, was deemed preferable for this study.

Although the recording of verbal reports took place in a lab with a computer that may have been configured differently from a user’s own computer, this approach was favored because it controlled for the quality of web connection and software differences, and also ensured that all participants experienced similar conditions (Hargittai, 2002). To measure cognitive strategies, the concurrent think-aloud protocols provided a forum for students to explain their thinking and decision making while they accessed, scanned and filtered information to determine its usefulness to them. Following O’Brien (2011), this study used a simulated task scenario to bring realism to the study and to provide participants with parameters for online news interactions such as time frame and search



starting point. For instance, students were told that they could take up to five minutes for each news search<sup>vi</sup> to limit the variability of search duration among participants and to prevent participant fatigue (O'Brien, 2011), as lengthy interviews followed the two tasks.

Other than requiring that participants seek news of previously identified high interest and begin on the sites they most often use, the task was designed to be as open-ended as possible in order to give them maximum choice, an attribute found to be critical to user engagement (O'Brien & Toms, 2008). Prior to the task, participants were instructed to explain aloud what they were thinking and doing during each step of the process of searching for and selecting news and reminded to do so as the task proceeded only as necessary. Participants were given a time limit in which to complete the news seeking tasks in order to provide parameters for their online news interactions. Additionally, the researcher did not interrupt students during the think-aloud portion of the study in order to avoid priming them.

#### *Computer Screen Capture*

Images of the portals and news sources each student accesses during the news seeking task were recorded using the screen capture software program SnagIt. The researcher used the recording of the web sites students visited during the think-aloud protocol tasks in order to facilitate the semi-structured interviews and to later analyze the news items that students select.

#### *Semi-Structured Interviews*

Following the think-aloud task, the researcher conducted semi-structured interviews. The first set of questions sought additional information about students' news search habits. Questions included "How is this site part of your typical daily news

routine?” “Why do you typically start with (name of site) when searching for news on a topic of interest?” and “If/when you access this news site from a mobile device rather than a computer does your search routine change?”

Questions were also posed that apply to the specific decisions students made during the news seeking and selection process and that reveal awareness of how the ways in which they access news shapes what is consumed, with a focus on the potential impact on content credibility and diversity. Questions included, “How did you decide what to scan or read and what to ignore?” “What specifically about this news item led you to consider it?” and “How did you make credibility evaluations?” Ericsson and Simon (1981) found that research using concurrent probing and reporting from short-term memory showed a consistent relationship between awareness and observed behavior.

Participants were asked whether they had been following or were familiar with the news items they selected, and if so, to identify their prior interest in the news items in order to help determine why they made their selections. Finally, participants’ awareness of how the process of selecting and filtering news online affects what is consumed was measured by a series of questions such as “Do you know how particular news items are selected to be listed more prominently on this site?” “Do you know if your digital media habits affect what is shown on this site or how a news item is displayed?” and “Do you know who owns and operates this site?” Measuring students’ awareness of concepts related to accessing news online in connection with their own actual news searches is believed to produce more ecologically valid information than doing so solely through survey questions (See Appendix B for the full series of interview questions).

The interview questions were compartmentalized in order to ensure a structured conversation and to avoid priming participants. The first series of questions elicited data on the context in which participants access news through their most-commonly visited news sites and their motivations for doing so. Subsequent questions covered participants' awareness of their news selection strategies and processes of determining credibility. The researcher used screen captures of the news items considered for the tasks in order to provide a frame of reference for the interviews (O'Brien, 2011). Follow-up questions designed to measure participants' ability to identify specific concepts related to their news search were not asked until after the tasks were completed. Once data about strategy and process were collected, the conversation turned to awareness of news literacy concepts such as media ownership, proprietary news algorithms, news personalization, etc. These questions were saved until last because they would be the most likely to prime participants about the study.

### **Procedure**

In April 2013, the researcher visited classrooms<sup>vii</sup> to recruit students to participate in the study. Interested students provided their contact information and received an email the same day with a link to the online survey. The researcher also sent a recruitment email and survey link to members of student groups and living-learning programs. Prospective participants were informed in either the class visit or the recruitment email that they could complete the survey at a time and place of their choosing, their names would not be used in a final study, and by participating in the study they would be eligible to win a \$25 gift card and/or receive \$20 should they be selected for and take part in a lab session.

Before completing the survey, participants read and electronically signed the Institutional Review Board (IRB) consent form (Appendix C). Over a one-week period in April 2013, they completed the online survey with the last two questions asking whether they were interested in being considered for the random gift card drawing and/or taking part in a lab session. Of 244 survey respondents, 74.6% indicated an interest in being considered for the lab session and were placed in a potential lab participant pool. Given that the purpose of the lab portion of the study was to obtain information based on the typical routine of accessing and evaluating news using a computer, participants who indicated that they never used a computer to access news were removed from the participant pool. Survey respondents who only listed one news site at which they begin their news searches were also disqualified because the lab session task required that they visit two different sites. The remaining participants had a wide variability in computer use, interest in news topics and news consumption habits. The objective was for the overall news consumption profile of the participants selected for the lab portion to generally reflect that of all participants who completed the survey.

Using a computerized random-number generator, the researcher selected 40 names from the potential lab participant pool. Participants selected for lab sessions were sent an e-mail notification with available dates to sign up for participation. This invitation informed them of the expected duration and location of the lab sessions, and reminded them of the \$20 reward for participating in this part of the study. Participants were informed that if they did not respond to the invitation within 48 hours the researcher would assume they were no longer interested and invite others to participate.

Thirty-five participants responded to the initial e-mail invitation and signed up for lab sessions. In order to reach the desired 15% of overall survey respondents to participate in lab sessions, the researcher sent out two additional invitations, both of which were accepted.

Lab sessions took place inside a new media research room at the journalism college from late April to early May 2013. Only the researcher and participant were in the lab during each session. Upon arrival at the lab, participants were greeted and asked to sign a second Institutional Review Board (IRB) consent form that explained the lab session. They were then seated in front of a computer monitor, wireless keyboard and mouse. Opened on the monitor was a blank Microsoft PowerPoint presentation saved under their last name. Similar to Hargittai et al. (2010), the session began with participants being told that this study seeks to investigate how they access news online. Next, participants were reminded of their survey responses to questions about where they typically begin their news searches and the topic(s) that most interested them<sup>viii</sup>.

Specifically, participants were read the following instructions:

In just a moment I'd like you to conduct a news search. You indicated on the survey that you often begin your news search on \_\_\_\_\_ (most-often-used site). Thus, please begin your news search at this site.

I'd like you to find news about \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_, the topics you indicated on the survey you are most interested in. The news item you select should be one that you consider credible.

You can navigate anywhere on the site you start at and select a news item from any source. You can also click through to other sites in the process of your news search. You aren't limited to a traditional news site. You can reject as many items as you wish before making your selection.

The news item you select can be in text, video or audio format.

I will observe and create screen captures of the site or sites you visit but I won't ask questions during the search process. I know you don't typically get news with someone looking over your shoulder, but as much as you can please use your typical news search routine – the one you'd use when sitting in your dorm or apartment.

One more instruction: As you search for news, please think out loud, that is talk about what you are doing during each step of the process of searching for and selecting the news item.

Explain your reasons for visiting each Website or news source, how you are navigating it, how you are making credibility evaluations, and what you are considering when selecting or rejecting any link or news item.

Once you select a news item, please wait for further instructions. You have up to five minutes to complete this task. Do you need me to further explain these instructions?

Participants were not instructed to read the news items they selected carefully, because one of the data points was whether they did so before selecting it. Once participants indicated that they understood the directions, they were informed that they could choose among three browsers – Internet Explorer, Mozilla Firefox or Google Chrome – each of which had an icon on the bottom of the monitor. Following Hargittai et al. (2010), none of the browsers displayed a “default page” upon start up to avoid influencing participants’ next steps online. As participants selected a browser, they were asked if they would typically be signed into an e-mail or social media account while searching for news. Those who indicated in the affirmative were asked to sign in to those accounts in the case that being signed in would typically affect the news they encounter when accessing the news sites they visit.<sup>ix</sup>

As participants used the wireless keyboard and mouse to open up the site with which they most commonly begin their news search, the researcher pressed record on the digital audio recorder used to tape the session. Participants began to think aloud, typically first explaining what they do upon arriving to the website. The researcher, with a laptop placed on his lap that was connected to the monitor, began by pressing the laptop’s “print” button, which captured that screen and automatically sent it to a slide in the participant’s PowerPoint file. For each subsequent step taken by participants – clicking on a link, toggling between news items, opening a new web page, etc. – the researcher

continued to press “print” in order to create a chronological slideshow of participants’ progression during their news search. In addition to operating this screen capture software, the researcher documented each news search by taking notes about the participants’ narration and observing aspects of the news selection process not reflected in the captured images, such as participant comments and behavior (e.g., demeanor and time spent on a specific part of a task).

The researcher remained silent as participants searched for news, only interjecting if they asked for clarification about the task or were silent for more than 10 seconds, in which case the researcher used the prompt, “Can you tell me what you are thinking right now?” Once participants selected the news item they considered credible, the researcher used the laptop keyboard to bookmark that page for later analysis. Participants were then instructed to close their browser. Because one of the study’s data points was what participants identified as news, the researcher did not discard any selections (such as Facebook photos or event fliers) on the grounds that they did not align with a more traditional definition of news.

The researcher then directed participants to begin a second news search, following the same instructions as above while substituting their second-most-often visited site when beginning a news search.<sup>x</sup> Participants were instructed to again search for the topic(s) they indicated on the survey that most interested them.<sup>xi</sup> The process for the remainder of the second task was the same as the first. Upon selecting the second news item, participants closed the browser after the researcher again bookmarked that page.

Because participants searched for news on the open web rather than a controlled experimental environment, major news events taking place shortly before or during the

time of their search clearly influenced some participants' decisions. For instance, lab sessions began on April 22, 2013, just one week after the Boston Marathon bombings and just three days after one of the suspects was captured alive in Watertown, Mass. News about the Tsarnaev brothers and the investigation continued to break throughout the day during the first week of lab sessions. Just as the pace of new Boston developments slowed down at the start of the week of April 29, 2013, NBA player Jason Collins announced that he was gay. This story, although not having the impact of the Boston bombing, was covered widely on front pages of news sites early in the second week of lab sessions.

The semi-structured portion of the lab sessions began by the researcher asking participants questions about how the first news site fits into their daily news routine and why they begin their news search there. Next, the researcher informed participants that they would together review the process by which the participant selected the first news item. The screen captures of the first news search were brought onto the screen and stopped at the point at which the participant chose to begin the news search. The recorded screen images made during the session were used to retrace web sites viewed as a frame of reference for participants to answer questions during the semi-structured interviews about the process followed in accessing news and rejecting or selecting particular news items. The researcher asked questions about search strategies, what captured their attention and how they evaluated credibility. Follow-up questions depended on where participants began the search and the responses they provided to the first question. These follow-up questions focused primarily on the search process and were asked in order to



help the researcher understand participants' thought process while making decisions relating to accessing news online.

The researcher moved through each screen capture and asked search-related questions. When the slide showing the selected news item was brought onto the screen, the researcher asked the question, "Why did you select the article you finally chose?" If participants raised points about credibility, such as paying attention to the news source, author or sources quoted, the researcher asked follow-up questions but without any reference to credibility indicators that participants did not first mention themselves. Participants were then asked whether they had followed the news story they selected and if so what was their previous interest was in it. Finally, the researcher asked participants a series of questions about their awareness of how the news site ranks items, takes into account past user behavior on the site, and what they know about ownership and potential drawbacks of relying heavily on that site for news searches.

The above procedure was then repeated for the second news search task, with the conversation beginning with how the second news site fits into participants' daily news routine, and ending with a review of the process by which they selected the second news item and questions that gauged awareness of the site's ownership and news sorting mechanism. At the end of the conversation, the researcher turned off the tape recorder, saved the slideshow and entered the URLs of the two selected news items into a database. Students were given \$20 cash and thanked for their participation.

### **Data Analysis**

Survey data was analyzed using statistical analysis software. Early analysis of the think-aloud protocols involved observations of participants during lab sessions –

including compelling comments and the corresponding screen shots – and commentaries written after most sessions. These notes provided context about the search process that audio recordings and the screen capture software may have missed. They also provided the researcher with information to begin theorizing about appropriate categories of verbal report data for coding (Lindlof & Taylor, 2002).

Data analysis in verbal protocols typically includes the steps of transcribing, segmenting and encoding (Yang, 2003). Once the lab sessions were completed, the researcher transcribed and reviewed the audio recordings and analyzed the screen captured slideshow of the news searches. After the data was transcribed, it was separated into discrete segments – units that are sufficiently large so that all the information for making an encoding decision is contained in a single segment, and that reflect notable aspects of a participant’s strategic behavior. Participants’ verbalizations relate to what strategies they are employing to complete a task.

Protocol analysis – the examination of verbal reports that allows researchers to describe reader behaviors, most notably their strategies and goals (Afflerbach & Cho, 2009) – was used in analyzing the think-aloud data. Protocols are typically transcribed and analyzed to derive coding schemes that provide a good fit with the protocol data (Yang, 2003). The researcher used aspects of Ericsson and Simon’s (1984) and Yang’s (2003) criteria for encoding data for analysis. Ericsson and Simon’s information-processing paradigm states that categories must be clearly related to the questions and addressed in the study and that verbalization should be encoded in terms of heeded information the subjects expressed (Ericsson & Simon, 1984). Yang’s contextualized

view of think-aloud protocol methodology argues that it is difficult to establish all-inclusive and mutually exclusive categories (Yang, 2003).

During the open coding process, each episode – defined as an intact set of actions with a clear beginning, middle and end – was compared to others in order to decide in which categories they belong (Lindlof & Taylor, 2002). Clear theoretical definitions of the working category were then written. The process of coding the protocols, developing the coding schemes and developing a descriptive model takes place in a loop, meaning that there can be several cycles of interpreting, defining and refining (Yang, 2003). With the refined coding scheme, the researcher coded each participants' think-aloud and interview comments.

#### *Theory, Research & Primary Analysis That Inform the Coding Scheme*

No existing coding scheme adequately measured news consumers' cognitive strategies and evaluation criteria, and their awareness of how their choices when accessing news online shape what they consume. Therefore, an original coding scheme was developed that incorporates existing theory, prior research and the researcher's primary analysis of the transcripts. Theoretical orientations included (1) the cognitive theory of media literacy (Potter, 2004a) that places an emphasis on the strategies people use to process media messages; (2) active audience theories that focus on how people consume media in their everyday environments (Morley & Brunson, 1978; Hall, 1980) and what strategies they develop for paring down the flood of information; and (3) critical thinking theory (Facione, 1990) that explains the importance of critical analysis of information.

As described in the previous chapter, this study measured cognitive processing. Participants performed what Brown (1989) called an “authentic activity” by seeking out news in topics of stated interest across two news sites that were familiar to them. In regards to cognitive strategies and evaluation criteria included in the coding scheme, O’Brien and Toms (2008) provided the framework for the stages of user engagement with media (point of engagement, sustained engagement and completion of activity), which were adapted for the purpose of news seeking to include “initial strategy used in news search,” “search strategies and factors used/cited to filter news” and “strategies and criteria used/cited to evaluate news outlets and items.” These macro-level concepts were developed based upon the researcher’s personal knowledge of online news seeking routines and an analysis of the transcripts that demonstrated the stages of searching for news.

For initial strategy used in the news search, Tewksbury et al. (2011) and Lavie et al. (2010) contributed the concept of “selectors” and “browsers,” which the researcher adapted to “information seekers” and “information scanners” after a primary analysis of the transcripts and again incorporating personal knowledge of how people access news online. News filtering strategies and factors for this study’s coding scheme included classifications developed by Hargittai et al. (2010), Fast and Cambell (2004), Pan et al. (2007), and Rieh and Hilligoss (2008) in studies about how people seek out information online, and by Coiro (2011a), Weber (2012), and Baker and Bassell (2013) about how people verify information online. The news outlet and item evaluation criteria tracked in this study included aspects of credibility scales from Gaziano and McGrath (1986), Newhagen and Nass (1989), Kiosis (2001), Flanagin and Metzger (2000), Fogg et al.

(2003), and Metzger (2007). It also borrowed from a news media literacy scale developed by Ashley et al. (2013). Fallows (2005), Moody and Bates (2013), and Duran et al. (2008) contributed to questions gauging participants' awareness of how choices when accessing news shape what is consumed.

### *Explicating Concepts, Dimensions and Indicators*

The search strategy and evaluation criteria coding scheme used in this study (Appendix D) included a range of concepts, dimensions and indicators, all of which are listed in temporal sequence. The coding scheme was ordered so that the first concepts, dimensions and indicators were ones that students encountered as they began their online news search, and the later categories were ones they encountered as they progressed through the search, roughly in the sequence provided.

The coding scheme was also organized in a way that took into account whether indicators are strategies, factors that influence strategies or criteria used to evaluate a news outlet or item. This study adopts Afflerbach et al.'s (2008) definition of reading strategies as "deliberate, goal-directed attempts to control and modify the reader's efforts to decode text, understand words and construct meanings of texts" (p. 368). Examples of strategies students employed for their news search tasks included searching with or without specific news in mind, and accessing and comparing multiple stories at a time. None of the indicators listed were clear examples of reading skills, defined by Afflerbach et al. (2008) as "automatic actions that result in decoding and comprehension with speed, efficiency, and fluency and usually occur without awareness of the components or control" (p. 368).

Factors that influence strategies included trending topics and friend’s recommendations, both of which are factors that operate in service of a particular strategy in a news search. Criteria refers to indicators such as familiar journalist and authoritative source on topic – the ways in which students measure credibility of a news item or outlet. Tables 1-4 show the concepts and dimensions, and how the indicators were explicated. The tables were grouped by whether indicators were considered strategies, factors that influence strategies or criteria.

**Table 1. Concept: Initial *strategy* used in news search**

Indicator	Explication of Indicator
Searched <i>without</i> specific news in mind	Information scanner who conducted open-ended search with awareness of a goal but no specific question
Searched <i>with</i> specific news in mind	Information seeker whose goal was finding specific news

All participants were instructed to start their news searches at sites they most often visit and search for a topic about which they indicated on the survey having a high level of interest. Before participants started their search (or perhaps as they began), they determined whether to conduct a broad search without specific information in mind or search for specific information. Based on this decision, they were either coded as information scanners or information seekers. If they began their search broadly by searching without specific news in mind but later in the search switched to seeking specific information (which several did), they were still coded as information scanners given that their original decision was to cast a wide net in their search.

Once participants determined their initial strategy for their news search, they employed a variety of search strategies and factors to narrow down the news items to consider, defined as “filtering news” and shown in Tables 2a and 2b.

**Table 2a. Concept: *Strategies* used/cited to filter news**

<b>Dimension</b>	<b>Indicator</b>	<b>Explication of Indicator</b>
Outlet Reputation/ Familiarity	Considered news outlet when presented with choices by a portal site	Began search at a search engine, news aggregator, social media or social news site and made decision by considering the news outlet that produced the news
Content	Headline drove decision of what items to consider	Indicated that a headline’s content prompted them to click on or ignore an item
	Considered summarization/digest	Considered digest/short summaries of full stories that appear below the headline and are generated by news algorithms or written by editors
Use of Online Interface	Clicked through to landing page/specific section of the site	Intentionally went to topic-orientated landing pages such as “business” or “technology” traditionally listed on the far left column of a website or, in the case of Reddit, gravitated toward subreddits listed near the top of the page.
	Accessed and compared multiple stories at a time	Considered a substantial number of news items before determining which ones to access
	Surveyed options on a home page before making a decision	Opened new windows or news tabs so that they could consider several stories after conducting their initial “sweep.”

**Table 2b. Concept: *Factors that influence strategies used/cited to filter news***

<b>Dimension</b>	<b>Indicator</b>	<b>Explication of Indicator</b>
Popularity/Social Recommendation	Top-ranked/listed stories	Clicked on first item or item near the top when presented with a list of news stories on a home page, search results page or social media/news site
	Trending topics	Narrowed a search to items listed under a “trending” heading (Twitter) or horizontal row directly under a masthead and above the top story (news outlets)
	Crowd’s recommendation	Gave priority to items with the most “upvotes” by users who suggested news items (Reddit) or considered items listed under “most read”/“most-emailed” (news outlets)
	Friend’s recommendation	Narrowed a news search on social media by looking for items posted by their friends, or those who indicated that they searched for a news story on other platforms because of a friend’s recommendation.
	Social currency in peer group	Mentioned wanting to search for news that they could bring up in conversation with friends or in the classroom
Design of Online Interface	Visuals (photos or graphics) drove decision of what	Gravitated toward (or away from) news items because they were accompanied by visuals (still photos, slideshows, videos, logos, etc.)

News filtering, this second macro-level concept, is critical because online news searchers must determine how to make the flood of online information more manageable. Each of these strategies and factors were used by students *before* opening any news item. In fact, they were ways that students determined which items to consider.

The dimension “outlet reputation/familiarity” included participants who, when presented with a list of news items to consider, scanned the list of news outlets to look for familiar and/or trusted news sources. The dimension “content” includes those who, rather than relying on the name of the news outlet, read the content available on a search results or home page to determine which items to consider. Participants who considered an item’s ranking or a social referral are included in the dimension “popularity/social



recommendation.” The final dimensions in this section, “design of online interface” and “use of online interface,” referred to participants who strategically used a web site’s design or browser functionality to narrow down search items to consider.

The third concept included in this coding scheme, “news outlet evaluation criteria,” measured the ways in which lab session participants determined where to begin their news searches and/or which information sources to trust during the course of the search. All participants expressed some evaluative judgments about the two sites at which they typically begin their news searches. Lab participants were not explicitly asked to provide think-aloud comments about how they evaluated news outlets, but some did so during their narratives or when asked during the post-task interview.

**Table 3. Concept: *Criteria* used/cited to evaluate news outlets**

<b>Dimension</b>	<b>Indicator</b>	<b>Explication of Indicator</b>
Reputation	Familiar journalist	Recognizable or trustworthy journalist who works at a news outlet
	Perceived outlet reputation or prominence	Brand name or reputation of the news outlet as a trustworthy source
	Authoritative source on topic	Go-to place to find credible information on a given topic
	Friends less reliable than news organizations	Preferred getting information from news outlets than friends, who were deemed less credible news sources
	Site domain	Website’s top-level domain name (.com, .edu, .gov) when assessing its credibility as a news source
Content	Use of editors/edited content	News outlet employs editors to verify information
	Quality of writing	Overall level of writing – not for a single news item but rather its overall body of work
	Identifies and/or links to sources	Forthcoming about the source of information and attributes (with links to the original source) when appropriate

After lab participants determined their initial search strategy, filtered news and made evaluative judgments about news outlets encountered during the search (if applicable), they considered one or more news items (usually articles) and eventually selected a credible item to complete their lab session task. The final stage of their search was represented by the concept “news item evaluation strategies and criteria.” These are the actions students took and attributes of a news item they considered in order to evaluate individual news stories rather than news outlets as a whole. Indicators within this concept such as “social recommendation” and “prominence or placement/rank on site” are similar to indicators within the “search strategies used to filter news” concept. The difference is in when the social recommendation or placement/ranking was influential in the participant’s search – in the initial filtering stage or when it came time to select a news item. The strategies and criteria used to evaluate news items are listed in Tables 4a and 4b.

**Table 4a. Concept: *Strategies* used/cited to evaluate news items**

<b>Dimension</b>	<b>Indicator</b>	<b>Explication of Indicator</b>
Content	Clicked through links in a news item	Actually clicked on the links and evaluated what was found
	Checked multiple sources for comparison	Compared information found in one news item to content in another item (cross-referencing)

**Table 4b. Concept: *Criteria* used/cited to evaluate news items**

<b>Dimension</b>	<b>Indicator</b>	<b>Explication of Indicator</b>
Reputation	Trustworthiness of news outlet	Decision based at least in part on the reputation of the news outlet that supplied the content rather than the merits of the news item
Content	Existence of attribution	Whether the sources of information – either human sources or names of news outlets that originally reported news – are cited
	Authoritativeness of sources cited	Whether the sources cited are reputable and knowledgeable
	Existence of content producer's name	Whether a reporter or photographer's name is included for a news item, but not the producer's authoritativeness
	Authoritativeness of content producer	Whether reporter or photographer is reputable and knowledgeable
	Existence of link in a news item	Whether a news story has links to click through
	Clicked through links in a news item	Actually clicked on the links and evaluated what was found
	Content of the headline	Based news item evaluation on the headline (rather than using it merely as a sorting mechanism to determine which news items to consider)
	Depth of reporting	Mentioned criteria such as length of a news item, number of interviews conducted and amount of space spent explaining a concept
	Factuality/opinions	Truthfulness or lack thereof
	Evenhandedness/balance	Bias, fairness or similar terms
Popularity/Social Recommendation	Checked multiple sources for comparison	Compared information found in one news item to content in another item (cross-referencing)
	Social recommendation	Friend's recommendation – often on a social media site
Design	Prominence or placement/rank on site	Placement of item near the top of a webpage or article ranking
	Usability/visual appearance	Visual appeal or accessibility/usability of a website

Additionally, the coding scheme can be categorized based on whether the focus was on what participants brought to the news search (prior knowledge, experience and

preferences), the properties of the news item (content, design and placement) or an interaction between user and news item. The indicators “searched with and searched without specific news in mind” under the concept “initial strategy used in news search” were examples of the focus being squarely on what participants brought to the news search process given that at this early stage they determined how to begin their news search based on preferences of whether they wanted to search broadly for news or find answers to specific information. At this point in the search process, specific news items had yet to be accessed. An example of an interaction between searcher and news item was the indicator “evaluated trustworthiness of news outlet” under the concept of “news item evaluation criteria.” In this case, participants brought with them prior experience with a news outlet so that when they were exposed to a news item, they evaluated it not only based on its own merits but also based on past preferences for the outlet itself. Finally, an example of the focus being squarely on the properties of the news item was the indicator “visuals drove decision of what items to consider” under the “search strategy used to narrow down news items to consider” concept. In this case, participants’ evaluations were based upon qualities of the text, in this case placement on the site or visual appeal.

#### *Coding Marks Used on Search Strategy and Evaluation Criteria Code Sheet*

During the coding process, the researcher noted whether participants made comments about their news searches with or without prompting by the researcher. Participants’ think-aloud comments, which were unprompted and spoken as they completed the news search task, were coded based on whether they referred to actions taken during the news searches for the lab study (coded as NA=“Narrative Action”) or

actions they sometimes take during news searches conducted on their own (coded as N=“Narrative”). Falling within this “narrative” category suggested that the participant had more conscious awareness of a particular concept relating to the process of accessing news online than those who did not contemporaneously identify it but were able to do so when asked. Comments made by participants during the think-aloud portion of the lab study were the most accurate measures of their in-the-moment thinking and metacognition, or awareness of one’s own thinking process, given that they were shared contemporaneously and without prompting by the researcher.

Of greatest interest were the think-aloud comments made about the two news searches, as the researcher could observe and confirm participants’ actions. Another possibility was that participants demonstrated an action, such as considering a story’s placement on a news site, without mentioning it at all during the think-aloud or interview process (coded as A=“Action”). This was considered lack of awareness given that no basis exists to presume the action was part of a strategy, as opposed to a random choice.

Participants’ interview responses were provided after they completed the news search tasks. The researcher prompted participants by asking specific questions about the news search and following up on comments they made during the think-aloud commentary. Participants’ responses were again coded based on whether they referred to actions taken during the observed news searches (coded as IA= “Interview Action”) or actions they sometimes take during news searches conducted on their own (coded as I=“Interview”). Once again, comments made about the two news searches were of greatest interest to the researcher. The coding sheet tracked whether or not a participant mentioned a strategy or criteria, but not the number of times it was mentioned. The

researcher did not feel that quantity of a participant's references to a particular search strategy or evaluation criteria was an important metric, as multiple references could simply mean that the researcher asked follow-up questions that elicited repeat responses.

Following completion of the search strategy and evaluation criteria code sheet, the researcher trained a colleague in the journalism college to analyze the data using the above coding scheme. Both individually coded the think-aloud data and interview responses of five students (14% of the overall data collected). The coders discussed their results, resolved the majority of their discrepancies and emerged with a .933 intercoder reliability using the Krippendorff's Alpha (KALPHA) test, as calculated through SPSS (Hayes & Krippendorff, 2007). A KALPHA result of .80 or greater is considered optimal.

Finally, the researcher tabulated participants' responses to questions about their awareness of how the sites they most often access select and display news. For open-ended question such as, "Do you know how particular news items are selected to be listed more prominently on the site?," participants were not presented with a list of possible choices but rather asked to mention any response that came to mind (Google users, for instance, could mention any of the click signals that help determine what news items users see and in what order). The researcher sought unprompted responses in an effort to gauge participants' organic thinking about the news sites they most often visit. For closed-ended questions such as "What is a promoted Facebook or Twitter post?" participants' responses were coded as either providing the correct definition, giving an incorrect definition or having never heard of the concept. Because participants' responses to these questions were easily categorized as being right or wrong, the researcher coded responses without seeking another coder.

Lab participants were each asked the following open-ended questions about how the sites at which they begin their news search select and organize information: (1) Please tell me what you know about how news items are selected to be on this site. (2) Do you know how particular news items are selected to be listed more prominently on the site? (3) Do you know if how often an item has been clicked on by other people affects how it is displayed – its rank or prominence on the site? (4) Do you know if your digital media habits affect what is shown on this site or how a news item is displayed (i.e., its listed rank or prominence among choices)? Results were reported as either “aware” (providing the correct answer) or “unaware” (providing an incorrect answer or being uncertain).

## Chapter 5: Results

### Online Survey

#### *Demographics*

244 participants completed the online survey,<sup>xii</sup> a majority (56.6%) of whom were female. The sample was relatively young ( $M = 19.5$ ,  $SD = 0.5$ ), distributed as follows: age 18 (27.9%), 19 (34.4%), 20 (13.9%), 21 (13.1%), 22 (7.8%), and older than 23 (2.4%).<sup>xiii</sup> Roughly one in five survey participants (20.9%) had taken a high school or college course covering media literacy.

Table 5 shows the distribution of participants by school or college, with the highest percentage in the College of Behavioral and Social Sciences (23.8%), College of Arts and Humanities (19.7%) and College of Computer, Mathematical, and Natural Sciences (16.8%). Only (8.6%) were in the college of journalism.

**Table 5. Number and percentage of participants by college/school**

<b>College</b>	<b>Number of Participants</b>	<b>Percentage of Participants<sup>xiv</sup></b>
Behavioral & Social Sciences	58	23.8
Arts & Humanities	48	19.7
Computer, Mathematical, and Natural Sciences	41	16.8
Business	35	14.3
Engineering	22	9.0
Journalism	21	8.6
Letters & Sciences	13	5.3
Undeclared	13	5.3
Agriculture and Natural Resources	12	4.9
Public Health	11	4.5



Other <sup>xv</sup>	7	2.9
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At the University of Maryland, 22.6% of undergraduates are in the College of Behavioral Sciences, 16.4% are in the College of Arts and Humanities and 2% in the College of Journalism. Fifty-three percent of University of Maryland students are male and 47% are female.<sup>xvi</sup>

*RQ1 asked: How do college students access news and what news topics do they prefer?*

#### *News Search Habits*

Participants more commonly happened upon news than set out to find it. More than three-quarters (76.5%) came across news at least once a day while doing other things, such as checking email or social media, and 96.3% did so more than once per week. By contrast, less than half (41.2%) went online specifically to get news at least once a day and more than one-third (35%) did so once a week or less.

Slightly more participants “agreed” or “strongly agreed” with the statement “I typically browse for news without having a clear idea of what I’m looking for” (43.2%) than the statement “I typically have a clear idea of what I’m looking for when I search for news” (40.8%). Roughly half (51.2%) “agreed” or “strongly agreed” that “I only follow news about specific topics that really interest me, while 65.8% said the same about the statement “I like coming across news about topics and issues I have not thought about very much before.”

Participants preferred receiving news (known as information push) to actively seeking it out (known as information pull), indicating that they “agreed” or “strongly agreed” with the following statements: “I like to receive news from other people” (75%), “I like to rely on technology (e-mail/text alerts/RSS feeds, etc.) to send me news”

(53.7%) and “I like to actively search for news” (47.9%). The vast majority (84.8%) either “agreed” or “strongly agreed” that “I like to share interesting news stories with others.” A statistically significant relationship exists between actively searching for news and frequently consuming print news on the computer ( $r = .266, p < .05$ ), but not between receiving news from other people or relying on technology to send news and consuming print news on the computer. Less than half (46.2%) of participants used a website or app that they customized to include or display their favorite type of news.

Survey participants who had taken a media literacy course ( $n=51$ ) were compared with a randomly selected group of 51 survey participants who had not taken a media literacy course to determine whether their news consumption habits differed substantially in several key respects. Participants who had taken a media literacy course were more avid news consumers through a computer, with 62% spending more than 30 minutes a day (compared with 40% of those who had not taken such a course) and 24% spending at least one hour daily (compared with 18% of their counterparts). Only slightly more participants who had taken media literacy said they go online to get news at least once a day (49%) than did those who had not taken such a course (45%), and only slightly more agreed or strongly agreed with the statement “I like to actively seek out news” (45.1% versus 43.1% for participants who had not taken such a course).

Similarly, survey participants who were journalism majors ( $n=21$ ) were compared with a randomly selected group of 21 survey participants who were not journalism majors to determine whether their news consumption habits differed substantially in several key respects. Journalism majors were more avid news consumers through a computer, with 57.1% spending more than 30 minutes a day (compared with 38.1% of non-majors), and

just 19% spending less than 15 minutes daily (compared with 42.9% of non-majors).

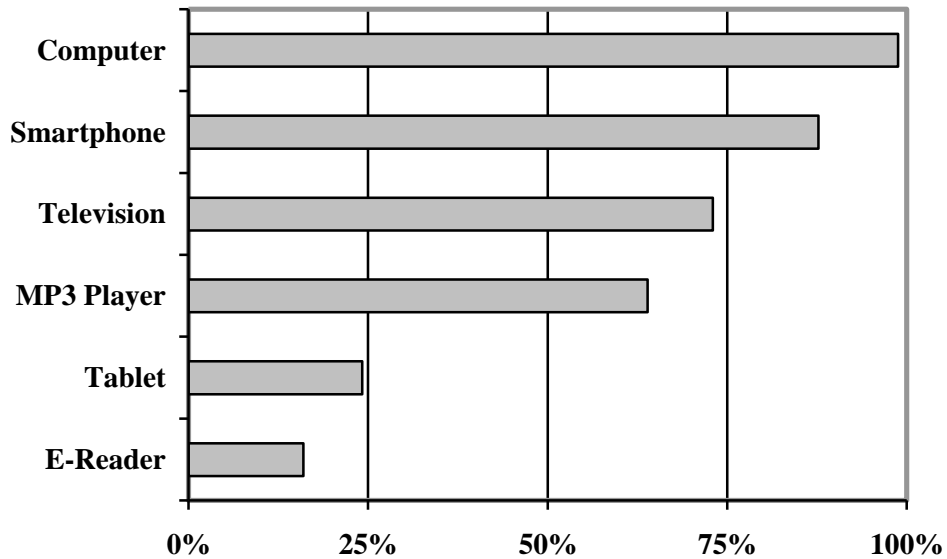
Only slightly more journalism majors said they go online to get news at least once a day (47.6%) than non-majors (42.9%), and only slightly more agreed or strongly agreed with the statement “I like to actively seek out news” (61.9% versus 57.1% of non-majors).

#### *Access to Communication Technologies*

As illustrated in Chart 1, nearly every participant surveyed (98.8%) owned or had regular access to a laptop or desktop computer (50.4 % Mac, 49.6% PC), slightly above the national rate (93%) for computer access among teenagers (Madden, et al., 2013).

Participants surveyed also overwhelmingly had a cell phone with internet access (87.7%), slightly above the national figure (80%) for Americans ages 18-29 and well above overall figure (56%) for all adults (Smith, 2013). Nearly three-fourths (73%) of participants said they owned or had access to a television, well under national average (96.7%) for American households (Nielsen, 2011).<sup>xvii</sup> A majority (63.9%) owned or had access to digital music players. Only 24.2% owned or had access to a tablet, which closely aligns with the national rate (23%) for teenagers (Madden, et al., 2013) and is below the rate (35%) for Americans over the age of 16 (Smith, 2013). Just 16% of participants had access to or owned an E-reader such as a Nook or Kindle, below the rate (24%) of Americans 16 and older (Smith, 2013).

**Chart 1. Percentage of participants who owned or had access to communication technologies**



*Time Spent Accessing News*

Table 6 summarizes the amount of time participants spent daily on various platforms consuming news, defined for them as “information about current events or issues.” Appendix E provides the percentage of responses for each platform within time increments of 15 to minutes or more.

**Table 6. Minutes spent daily accessing news (by platform)**

<b>Platform</b>	<b>60 or more</b>	<b>30 or more</b>	<b>Less than 30</b>	<b>None</b>
Computer	15.8%	45.0%	55.0%	0.4%
Cell or Smartphone	9.2%	26.3%	73.8%	15.8%
Word of Mouth	8.1%	22.5%	77.5%	8.9%
Television	3.0%	17.3%	82.7%	30.8%
Tablet	0.8%	7.6%	94.4%	74.3%
E-Reader	0.4%	0.9%	99.1%	95.7%
Radio	0.0%	7.7%	92.3%	67.2%

Printed Newspaper or Magazine	0.0%	2.5%	97.5%	47.5%
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*News on Computer and Mobile Platforms*

Forty-five percent of participants spent more than 30 minutes and 15.8% spent one hour or more per day accessing news through a computer, a higher number than did so through any other platform. Participants less often accessed digital news by smartphone (26.3% for more than 30 min.; 9.2% for one hour or more) or tablet (7.6%; 0.8%). Less than 1% spent no time on a typical day getting news on a computer, compared with 15.8% on a cell phone and 74.3% on a tablet. Less than 1% spent more than 30 minutes per day reading news on an e-reader and 95.7% spent no time at all, consistent with the respondents' relatively low rate of ownership of these devices.

*News on Broadcast and Print Platforms*

Participants spent far less time accessing news on television, radio and print platforms than on computers or cell phones. Nearly half (47.5%) spent no time daily getting news through a printed newspaper or magazine and nearly all (97.5%) spent 30 minutes or less. For radio, 67.2% spent no time and 92.3% spent 30 minutes or less. For television, 30.8% spent no time and 82.7% spent 30 minutes or less. No one spent one hour or more daily on print or radio news and less than 1% did so on television.

Word-of-mouth (in person, phone conversations, online chats, etc.) followed computers and cell phones as the third-most-preferred platform for accessing news. More than 90% of participants reported discussing news daily – with 22.5% spending more than 30 minutes.

### *Time Spent on All Platforms*

All participants surveyed spent at least some time on a typical day accessing news on a digital platform and 83.5% did so on television, radio or print. To obtain the minimum amount of time each student spent accessing news daily the lowest time in the range reported for each platform was combined (e.g., 1 minute for the range “1-15 minutes,” 31 minutes for “31-45 minutes”). The results are in Table 7.

**Table 7. Minimum time spent daily accessing news across all platforms**

< 15 min.	< 30 min.	> 30 min.	60 or more min.	2 or more hours
9.9%	21.5%	78.5%	51.7%	23.1%

More than half of participants spent one hour or more per day consuming news and nearly one quarter spent more than two hours. Participants spent an average (mean) of at least 78 minutes per day ( $M = 64$ ,  $SD = 63.79$ ) consuming news on all platforms. Time spent consuming digital news on a computer, cell or tablet averaged at least 45 minutes per day ( $M = 32$ ,  $SD = 39.46$ ), and 17 minutes per day ( $M = 3$ ,  $SD = 22.87$ ) through television, radio or print.

### *Most Often Accessed Mediums for News on a Computer*

Table 8 summarizes the percentage of participants who on a daily basis consume print, video and audio news on a computer – the platform that is the focus of this study’s lab sessions.

**Table 8. Percentage of participants who consumed video, print and audio news on a computer**

Medium	Frequently	Sometimes	Rarely	Not At All
Video	34.4%	45.7%	18.0%	2.0%
Print	31.9%	30.0%	26.1%	12.1%

Audio	14.3%	25.4%	39.3%	21.0%
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Participants most often consumed video news on a computer, with 80.1% doing so sometimes or frequently, followed by print (61.9%) and audio (49.7%).

*Interest in News Topics*

Table 9 shows the percentage of participants who were at least “somewhat interested” in a range of news topics, as measured by a Likert scale in which 1 was “no interest” and 5 was “very interested.”

**Table 9. Percentage of participants at least “somewhat interested” in news topics**

<b>News Topic</b>	<b>% at least somewhat interested</b>	<b>Mean</b>	<b>SD</b>
International news	69.7%	3.82	1.04
Entertainment	67.0%	3.72	1.21
Health	62.0%	3.68	1.21
Technology	59.5%	3.65	1.15
Crime	59.0%	3.54	1.07
Education	54.3%	3.51	0.94
Science	55.1%	3.49	1.26
Sports	55.3%	3.46	1.48
Business/Economy	53.2%	3.40	1.18
Politics	45.1%	3.25	1.23
Lifestyle	44.3%	3.22	1.20
Arts	37.7%	2.89	1.28
Religion	26.6%	2.63	1.26

In 9 of the 13 topics listed on the survey, more than 50% of respondents indicated being at least somewhat interested. These included both “hard news” topics such as

international news (of highest interest to participants), health, crime and science, and “soft news” topics such as entertainment and sports.

*RQ2 asked: What online sites do students use when accessing news on a computer?*

*Sites Used to Begin the Search for News*

Participants were asked to identify up to three websites or apps in order of which they most often *begin* their news searches on a computer. Responses totaled 666 across all three searches (most-often used: n=238, second most-often used: n=230 and third most-often used: n=198). Participants identified 99 unique websites or apps. The names, number and percentage of total mentions, and grouping by type of each of these are included in Appendix F. Table 10 shows the results in order of the highest to lowest percentage of participants who typically turned to each type of site or app to begin their search for news.

**Table 10. Percentage of participants who began a news search at each type of site**

<b>Type of site/app</b>	<b>Most-often used</b>	<b>Second most-often used</b>	<b>Third most-often used</b>	<b>Total mentions</b>
Direct to News Source	33.2%	45.2%	55.1%	43.8%
Search Engine	29.8%	20.4%	14.1 %	21.9%
Social Media	18.5%	19.6%	15.2%	17.9%
News Aggregator	9.2%	12.2%	6.6%	9.5%
Social News	9.2%	2.6%	9.1%	6.9%

Participants went directly to a news source to access news more often than to any other type of portal into which the specific sites identified on the survey are grouped. Overall, however, they more often began searching for news on a portal that in some manner filters the news accessed. Among these portals, search engines were used most often, and news aggregators and social news sites the least often.



Table 11 shows the 15 specific sites to which the highest percentage of the 244 participants surveyed typically turned to begin their search for news.

**Table 11. Percentage of participants who began a news search at each specific site**

Begin search most often		Mentioned among top three	
Site	Students	Site	Students
Google Search	22.3%	Google Search	37.3%
CNN	9.2%	CNN	28.3%
Twitter	8.8%	Twitter	23.4%
Facebook	8.8%	Facebook	21.3%
Reddit	8.8%	Yahoo Search	18.4%
Washington Post	7.1%	Washington Post	18.4%
Yahoo Search	6.7%	Reddit	16.4%
New York Times	3.4%	New York Times	12.3%
Google News	2.5%	Yahoo News	7.8%
BBC	2.1%	Google News	7.0%
Yahoo News	1.7%	ESPN	7.0%
MSN	1.7%	BBC	6.1%
Wall Street Journal	1.7%	Huffington Post	4.5%
ESPN	1.7%	MSN	3.7%
Flipboard	1.3%	Flipboard	2.9%

Participants most often began a news search at Google Search by a substantial margin. No more than 10% begin a search at any other site. Among news sources directly accessed to search for news, *CNN* was the first choice of the most participants, followed by online versions of broadcast outlets *BBC* and *ESPN*. Among online editions of national print newspapers, *The Washington Post* was the top choice, followed by *The New York Times* and *The Wall Street Journal*. Social media sites Twitter and Facebook and social news site Reddit were among the top 5 most-often used (by nearly 9% of participants) of all sites. Google News was first among news aggregators, followed by Yahoo News, MSN and Flipboard. The portals on the list of where participants most-

often begin to search for news is the same as those identified among the top three, except for the Huffington Post’s appearance on the latter replacing *The Wall Street Journal*.

*Sites Used During the News Search Process*

To identify sites participants used at any time while searching for news on a computer, participants were asked how often they turn to prominent search engines, news aggregators, social media and social news sites for news of interest. Given the high number of news sources (such as *The Washington Post*, *CNN* and *BuzzFeed*) from which participants could have chosen, they were asked to identify the frequency with which they went directly to news sources in general, instead of to specific ones, with the exception of Tumblr, a prominent host for blogs. For purposes of analysis, the results were assigned to the groupings as follows:

<i>Direct to News Source</i>	<i>Search Engine</i>	<i>News Aggregator</i>	<i>Social Media</i>	<i>Social News</i>
Direct to Source	Google Search	Google News	Facebook	Digg
Tumblr	Yahoo Search	Yahoo News	Twitter	Reddit
	Bing Search	Bing News	Instagram	
		Flipboard	Pinterest	
		Zite		

Table 12 shows the results in order of the highest to lowest percentage of participants who frequently turned to each *type* of site for news of interest.

**Table 12. Percentage of participants who used each type of site for news**

<b>Type of site</b>	<b>Frequently</b>	<b>Sometimes</b>	<b>Rarely</b>	<b>Not at All</b>
Social Media	58.6%	20.9%	14.3%	6.1%
Search Engine	44.7%	36.9%	9.4%	9.0%
Direct to News Source	42.2%	35.7%	16.4%	5.7%
News Aggregator	33.2%	28.3%	17.2%	21.3%
Social News	16.0%	9.1%	10.3%	64.6%

Social media was the only type of site that a majority (58.6%) of participants “frequently” used for news and social news the only type that a majority (64.6%) used “not at all” for this purpose. Participants at least sometimes used a search engine (81.6%), social media site (79.5%), went directly to a news source (77.9%), or used a news aggregator (61.5%) with the most frequency. Barely one-quarter (25.1%) reported at least sometimes using social news.

Table 13 shows the results in order of the highest to lowest percentage of participants who frequently used *specific* portals for news of interest.

**Table 13. Percentage of participants who used specific portals for news**

Site	Frequently	Sometimes	Rarely	Not at All
Facebook	48.1%	21.4%	20.6%	9.9%
Google Search	42.8%	37.9%	9.1%	10.3%
Twitter	35.7%	14.8%	15.6%	34.0%
Instagram	18.6%	4.1%	12.4%	64.9%
Yahoo News	18.4%	15.6%	13.9%	52.0%
Google News	16.0%	24.2%	21.7%	38.1%
Reddit	16.0%	8.6%	9.1%	66.3%
Pinterest	9.5%	4.9%	11.1%	74.5%
Yahoo Search	6.6%	9.1%	14.8%	69.5%
Tumblr	5.7%	7.8%	11.1%	75.4%
Flipboard	3.3%	2.9%	3.7%	90.2%
Bing Search	1.6%	3.3%	5.3%	89.7%
Zite	0.8%	1.6%	2.5%	95.1%
Bing News	0.4%	5.0%	4.1%	90.5%
Digg	0.0%	1.2%	3.7%	95.0%

The most participants frequently turned to Facebook for news (48.1%), followed by Google Search (42.8%) and Twitter (35.7%). The only portals to which a majority of participants at least sometimes turned to search for news are Google Search (80.7%), and social media sites Facebook (69.5%) and Twitter (50.4%).

Participants at least sometimes used Google Search more often than competing search engines Yahoo Search and Bing Search by ratios of more than 5.2 to 1 and 16.5 to 1, respectively, and it was used frequently more often by ratios of 6.5 to 1 and 26 to 1. Among aggregators, a somewhat greater number of participants at least sometimes used Google News (40.2%) than Yahoo News (34.0%), with both used far more often than Flipboard (6.2%) and Bing News (5.4%).

Female participants were likelier than males to frequently turn for news to social media sites such as Facebook (56.9% female; 36.8% male), Twitter (38.4% female; 32.1% male), Pinterest (15.9% female; 1.0% male) and Instagram (25.4% female; 9.6% male). Females were likelier than males to at least sometimes use Google Search (87.0% female; 72.4% male), Google News (47.1% female; 31.1% male) and Tumblr (20.3% female; 4.7% male). Of all portals queried, the only two that males were likelier than females to use were social media site Reddit (at least sometimes – 36.8% male; 15.3% female; frequently – 26.4% male; 8.0% female) and Yahoo News (at least sometimes – 36.8% male; 31.9% female; frequently – 18.9% male; 18.1% female). When all portals were taken together, females were likelier than males to at least sometimes and frequently use them to access news by margins of 31.9% to 25.2% and 18.5% to 13.8%, respectively.

#### *Demographics and Technology Use of Lab Session Participants*

Fifteen percent (n=37) of all survey participants took part in lab sessions. This group was compared to a randomly selected group of 37 survey respondents who did not

take part in the lab sessions in order to determine whether lab session participants were representative of study participants as a whole. Lab session participants were split almost evenly between male (51.4%) and female (48.6%), a gender ratio that favors men more than the survey but that closely aligns with University of Maryland's gender ratio. Lab participants were very close to all survey participants in average age ( $M = 19.3$ ,  $SD = 1.12$ ) and academic focus, with the most common majors in the College of Behavioral and Social Sciences (24.3%), the College of Arts and Humanities (18.9%) and the College of Computer, Mathematical, and Natural Sciences (18.9%). Journalism majors (8.1%) and students who had ever taken a course in media literacy (16.7%) again made up a small percentage of lab session participants.

Overall, lab participants' access to and use of technology was similar to that of all participants surveyed. Every lab participant had access to or owned a laptop or desktop computer, and all but one used a smartphone. When accessing news on a computer, video and print were used more than audio. Lab session participants spent more time accessing news on a computer on a typical day than all survey respondents – 56% of lab participants spent 30 minutes or more, compared with 45% from the entire group. A greater percentage of lab participants spent one hour or more (19.4%) than between 1-15 minutes (11.1%) accessing news daily on a computer.

#### *News Consumption Habits Reported on the Survey by Lab Session Participants*

Consistent with all survey participants, the lab participants were far more likely to happen across news while doing other things than to set out specifically to find it and preferred to receive news from other people or technology than to actively search for it.

The news search habits of the lab participants differed materially from those of the entire group surveyed in only a few respects. When searching for news instead of happening across it, lab participants were somewhat more directed in doing so than the overall pool of students surveyed – 51.3% either “agreed” or strongly agreed” that they typically have a clear idea of what they are looking for compared with 40.8% of all respondents. A smaller percentage of lab participants (29.7%) use a website or app they have customized to show their favorite types of news than the overall group (46.2%).

#### *Preferred News Sources of Lab Session Subsample of Participants Surveyed*

The portals, websites and apps the subset of lab participants most often used to access news and to begin their news searches was so similar to that of the entire group surveyed that separately reporting the results would essentially be duplicative.

#### **Lab Sessions**

Data from the lab sessions was obtained from observation of participants’ news searches, think-aloud comments made during the searches and semi-structured interviews following the second news search.

#### *Choice of Where to Begin News Searches*

Participants had the option of choosing among three web browsers with which to conduct their lab session news searches. They overwhelmingly selected Google Chrome (n=27) over Mozilla Firefox (n=9) and Internet Explorer (n=1). Each participant was required to enter the web address of the site they indicated in their survey response most often using when beginning a news search. After concluding the first search, each participant repeated this process to access the site used for this purpose second most

often. A list of the 74 sites on which the 37 lab participants began their news search is in Appendix G.

Participants described what may be characterized as incidental news consumption in the think-aloud narrative of the news searches or in interviews that followed.

Representative comments from three participants included:

*I'll usually hit up Yahoo because it's where my e-mail is. Checking out whatever they have on their front page is a secondary thing.*

*I'm not really looking to read news when I'm on Facebook. It's just there in front of me.*

*I don't go out of my way to search for news. When I'm doing normal activities on the Internet, and if I have extra time, I'll peruse a little more.*

Lab participants reported gravitating toward online versions of legacy news outlets such as *The Washington Post*, *Newsweek* and *CNN* because the papers were delivered to their houses or broadcast stations were their parents' favorites. Some participants described little use of judgment behind their habitual use of news sources and outlets. Several could not recall when their habit of turning to sites such as Google for news began. Representative comments included:

*I don't use Bing or anything like that because we used Google in my house and when I was little it developed from that.*

*I've had Google forever. I don't remember a time when there was no Google.*

Five participants noted that they begin news searches at a news site such as MSN or Yahoo because it was pre-programmed as their computer web browser's default home page or cell phone, as illustrated by the following comments:

*MSN came as my homepage for Internet Explorer. I kept it there. It's pretty much my only source of regular news.*

*When I got my first smartphone in high school you had to make a Gmail account. I got pulled in by that to use all sorts of Google stuff in my everyday life.*

### *Computer vs. Mobile News Search Habits*

While study participants conducted their news searches on a computer, they were asked during the post-search interviews whether they also use a cell phone to access the two sites at which they most often begin their computer news searches – and if so how their news consumption routines might differ on these platforms. In 35.8% of 67 searches<sup>xviii</sup> participants reported that they typically access the news source selected mostly using a computer and do so only using a computer in 17.9%. Participants who visited search engines and news algorithms overwhelmingly fell into one of these groups, citing the awkwardness of typing search terms using a cell phone as a reason for preferring computers for sites such as Google and Yahoo.

In 23.9% of searches participants said they typically split their time evenly between accessing news sources through a mobile device and a computer. Many accessed news directly from a news source (such as *CNN* and *The New York Times*) and split time between using cell phone apps and going directly to the website on their laptops. In 20.9% of searches participants indicated that they mostly used a cell phone to access a news source used in the study. Most of these participants (11 of 14) began their news searches on a social media site. Nine of these cases involved participants using Twitter, with one commenting that when using Twitter, “the phone isn’t as much effort as the computer.”

For the vast majority (89.6%) of searches, participants said their news consumption routines differed depending on whether they accessed their preferred news sites on a mobile device or a computer. Cell phones were predominantly used for



purposeful, quick news searches while computers for browsing and more sustained search sessions. Participants frequently mentioned not enjoying and feeling impatient spending much time reading news on cell phones, due partly to usability limitations and a feeling of constrained time. Several noted that they skim just the headlines or the first few sentences of news on their cell phones and are more likely to spend more time on news items on their computers. Two representative comments included:

*I read longer stories on the computer. The phone is for instant gratification.*

*The phone is for something quick. The computer is for reading more in-depth.*

Several participants said they usually will not click through links to read a full story on their cell phone but they would do so on a computer. While participants said they skim stories on their phones, they do not typically allow themselves to come across news they are not intending to find, as illustrated by the two comments:

*On my phone I have an idea of what I'm looking for. I'd much rather search for exactly what I want and find it right away. When I'm using a laptop and I'll take more time. I don't have an idea of what I want and I allow myself to be open to reading different articles.*

*I feel like when I'm on my phone I'm trying to read a specific story. I'll just read it but go no further. When I'm on a computer I'm trying to read multiple stories.*

Several noted that it was easier on the computer to open new tabs and keep track of stories to read later, and that the loading time on cell phones lags behind computers, which deters them from opening slideshows and other multimedia elements. Six specifically said they avoided videos on their phone but not on their computer.

#### *Selecting a News Item During Lab Tasks*

The number of steps participants took to select a credible news item of interest varied greatly. For the purpose of this study, a step is defined as any time the URL

changed, such as when participants visited a new site or clicked on a tab on a web page, on live links such as headlines, photos, videos and article text, or on links within news items. Scrolling down while staying on the same page of a news site, search results page or news feed was not counted as a step. During the first search, participants took between 2 and 20 steps ( $M = 8.65$ ) to select a credible news item of interest. During the second search, they took between 2 and 15 steps ( $M = 5.68$ ). Participants took an average of 7.16 steps to complete all 74 news searches.

Participants overwhelmingly selected written material (70.0%) over video (12.2%) and images (10.8%). As Table 14 illustrates, web articles from television outlets (that began as TV properties) were the most often selected, followed by articles from web-only outlets and web articles from newspaper outlets. Just five participants selected a web article from a magazine or journal outlet, and only one selected a web article from a radio outlet.

**Table 14: Number of news item selections by news outlet category and outlet name**

Category	Number of Selections	News Outlet Name
Web article from TV outlet	20	CNN (8), BBC (4), ESPN (2), Fox News (2), ABC News, Al Jazeera, E! News, NBC News
Web article from web-only outlet	18	Yahoo! (5), Bleacher Report (3), Huffington Post (2), Bloomberg, The Daily Beast, Modern Dukes Blog (Tumblr), NFL.com, Pitchfork, Politico, TechCrunch, The Verge
Web article from newspaper outlet	13	The New York Times (5), The Diamondback (3), The Washington Post (2), The Washington Times (2), The Telegraph
Broadcast segments	9	Buzzfeed, Daily Beast, E! News, ESPN, Newser, Perez Hilton, VH1, Yahoo! YouTube (Dalai Lama Channel)

Image	8	Coachella (Facebook), Food Network, Howard Theater, Los Angeles Times, MGMT (Facebook), Think Lolita Blog (Tumblr), WashingtonRedskins.com, 90210 (Facebook)
Web article from magazine/journal outlet	5	Sports Illustrated (2), New Scientist, PubMed, Scientific American
Web article from radio outlet	1	NPR

The greatest number of participants selected news items from *CNN* (n=8), followed by *The New York Times* (n=5), Yahoo! (n=5), *BBC* (n=4), *The Diamondback* (n=3), *ESPN* (n=3) and *Bleacher Report* (n=3).

Participants were instructed to search for news on the topic of greatest interest indicated on the survey. Table 15 shows the most popular topics among the lab participants.

**Table 15. Number and percentage of news items selected by topic**

Topic	Number of Selections	Percentage
Sports	16	21.6%
Entertainment	13	17.6%
Crime	12	16.2%
International	6	8.1%
Technology	6	8.1%
Health/Environment	5	6.8%
Politics	5	6.8%
Education	4	5.4%
Business/Economics	3	4.1%
Lifestyle	2	2.7%
Science	2	2.7%

The popularity of sports and crime is partly explained by the timing of two major news events that occurred shortly before or right after lab sessions began: NBA player Jason Collins' announcement that he is gay (coded as sports,  $n=5$ ) and the Boston Bombing (coded as crime,  $n=6$ ).

In nearly 6 of 10 searches (59.5%) participants did not closely read or view the news items they selected, defined as follows: for articles, they just considered the headline, subhead, or digest compiled by a news aggregator or editor, or clicked through to the entire article but only skimmed the first few sentences; for videos, they watched less than one-fourth of the overall clip. Some clearly consumed none of the news they selected, as illustrated by their think-aloud comments that "I would definitely read this" or "I'd probably read that." Others screened news stories, described by Potter (2004a) as message monitoring that requires little attention and illustrated by the comment "I didn't do a very thorough investigation."

Participants indicated that they had been following or were previously familiar with the specific news item they selected in 75.7% of the searches. Twenty-two of the 37 participants (or 59.5%) had been following or were familiar with both news items selected, while just 3 (or 8.1%) indicated "no" on both searches. Participants who had followed or were familiar with a news item were asked to rate their prior interest in the news item before beginning their search on a 1-to-5 scale, with 1 being very low and 5 being very high. Participants on balance were somewhat interested in the news items they selected ( $M = 3.57$ ,  $SD = 1$ ).

*RQ3 asked: What search strategies and evaluation criteria do students use to seek out news about a specific topic of interest?*

Think-aloud tasks and subsequent interviews with lab participants revealed data about the strategies used to initiate news searches and to narrow down news items to consider, and criteria used to evaluate news outlets and news items. Results are presented in narrative form and in tables below showing the percentage of *participants* (n=37 unless otherwise noted) who in at least one of two searches used or cited their use of a particular search strategy or evaluation criteria, and the percentage of *searches* (n=74 unless otherwise noted) in which participants used or cited their use of each strategy or criteria. Appendices H through J show separately the percentage of participants who used each search strategy or evaluation criteria during the search and cited its use during the think-aloud or the interview or did not cite its use at any time, and those who did not use the strategy/criteria during the search but cited its use in general during the interview or narrative.

#### *Initial Strategy Used in News Search*

Nearly everyone (94.6%) proceeded in at least one of two searches without any specific news in mind, and nearly three-fourths (73%) did so during both searches. Participants proceeded without any specific news in mind in 83.8% of all searches and looked for a specific news item in only 16.2%.

**Table 16. Results: Initial strategy used in news search**

<b>Indicator</b>	<b>% of Participants</b>	<b>% of Searches</b>
Searched without specific news in mind (information scanner)	94.6	83.8
Searched with specific news in mind (information seeker)	27.0	16.2

Information scanners found news serendipitously, often by clicking through slideshows, scrolling through news feeds or browsing a news site's home page. Some information scanners narrowed their searches by looking for breaking sports news or lifestyle technology. But unlike the information seekers, who were goal-oriented and seeking a specific news story or answer to a specific query, information scanners left open the possibility of finding a news story they had not originally set out to read or watch. They used words such as "scanned," "perused," "browsed" and "scrolled" to describe their search. A Twitter user commented that,

*I usually scroll through, not looking at anything in particular. I just browse through it.*

Everyone who began their search directly at a news site or Reddit, as well the majority of those who began their news search at Twitter and Facebook, were information scanners.

Only 5.4% of participants were information seekers – searching with specific news in mind – during both searches, with 27% doing so in at least one of two searches. Of the 12 searches in which participants sought specific news items, seven began at Google, two each at Yahoo and Twitter and one at Facebook.

Participants searched with specific news in mind in the lab significantly less often than they reported as their typical habit on survey responses. On the survey, more than half of lab participants (51.4%) agreed or strongly agreed with the statement "I typically have a clear idea of what I'm looking for when I search for news," yet only 6 of these 19 (31.6%) actually did so in either of their searches. By contrast, just over one-third (35.1%) of the lab participants agreed or strongly agreed with the statement on the survey "I typically browse for news without having a clear idea of what I'm looking for," and all 13 actually did so, 11 in both searches and 2 in one of the two.

*Search Strategies and Factors Used or Cited to Filter News*

Table 17 shows the frequency with which various search strategies and factors were used or cited to filter news. Participants often employed more than one search strategy and factor to filter news.

**Table 17. Results: Strategies and factors used/cited to filter news**

<b>Indicator</b>	<b>Participants*</b>	<b>Searches**</b>
Top-ranked/listed stories	81.1%	59.5%
Considered news outlet when presented with options by a portal site***	78.6%	55.6%
Headline drove decision of what items to consider	73.0%	54.1%
Visuals (photos/graphics) drove decision of what items to consider	73.0%	58.1%
Went to landing page/specific section of the site	70.3%	48.6%
Surveyed options on a page before making a decision	54.1%	36.5%
Social currency in peer group	40.5%	21.6%
Accessed and compared multiple stories at a time	37.8%	25.7%
Crowd's recommendation	35.1%	17.6%
Friend's recommendation	29.7%	16.2%
Trending topics	21.6%	12.2%
Considered item summarization/digest***	14.3%	13.3%

\* Percentage of participants employing a strategy or factor during a search and/or citing the strategy/factor during the think-aloud narrative or interview in at least one of two searches

\*\* Percentage of all searches in which participants employed a strategy or factor during a search and/or cited the strategy/factor during the think-aloud narrative or interview

\*\*\* For participants, n=28; for searches, n=45

Half of the filtering strategies and criteria tracked that potentially affect the credibility or diversity of news consumed were used or cited as typically used by at least 50% of lab participants, and half were used or cited in at least one-third of all searches.

The most common filtering strategy was going to a top-ranked or listed story.

Representative think-aloud comments from three participants include:

*I'd click on this [CNN article] first because it's the first article.*

*We'll go here first since it's highlighted as a top story.*

*Usually one of the best stories [on Yahoo News] is right at the top – I'm more likely to click on one of the stories there than on a link below.*

While some participants went on to consider other news during their lab sessions, 32.4% of participants in at least one of two searches – and in 21.6% of overall searches – ended their search with the top-ranked news item. When asked why he selected the top-ranked story on Google's results page, one participant commented:

*It was the first thing I saw.*

The second-most-commonly used strategy when filtering news was considering the reputation or familiarity of the news outlet when presented with options by a news aggregator. This strategy was used by 78.6% of the 28 participants who faced a choice of news outlets in at least one search (those who did not go directly to a news source in both searches) and in 55.6% of the 45 searches that allowed participants to use it. Participants considered the news outlet as a filtering strategy as an initial gauge of trustworthiness at various times during their search, as illustrated by comments from two Reddit users:

*I always look at the source before clicking.*

*I pay attention to the source after I click on the link.*

Before selecting from a long list of news items to consider on Google's search results page, one participant said in the think-aloud narrative that,

*There are many choices – of the options given I think Huffington Post, U.S. News and the New York Times sound trustworthy.*



Many participants narrowed down news items to consider by going to a landing page or a specific section of a site. Participants often mentioned doing this because the home pages of sites ranging from aggregators such as Google News to news sites such as *The Washington Post* are busy and overwhelming. Focusing on a specific section or type of news story “cuts out the middle work a little bit” of having to sift through pages of possible news items, as a *CNN* user noted during the post-task interview.

More than half of participants surveyed options on a page before making a decision, only clicking on a story after a prolonged visit to a given page, rather than clicking on link after link and then reviewing the possible items. Examples include students who scrolled through many tweets and status updates, or who considered many stories on a page and clicked the “more stories” link on sites such as Google News. Less common was accessing or comparing multiple stories at a time by identifying items of interest, opening new tabs for other items to consider, then returning to compare all tabs. One participant described this as routine as “making a big sweep” before making a final selection. Participants cited as a reason for doing this not wanting to miss a news item of greater interest, as illustrated by the following comments:

*I don't want to click on something right away because I don't want to miss something I might like more. I'll look at the options given to me and pick the one I think will be most interesting.*

*I want everything I'm interested in so I don't forget when I come back [to make a final choice].*

Sixty-five percent of participants relied on the crowd's recommendation, a friend's recommendation or social currency of the topic in a peer group as a factor during a news search. However, fewer than half used or cited as being used any one of these

factors. An example of social currency as a factor was shown in a Facebook user's comment,

*I'm not going to take the time to watch the news but if everyone is talking about stuff I want to know what everyone's talking about.*

Of the 16 searches in which social currency was referenced, 10 began on social media sites and three by going directly to a news site.

Trusting the crowd was used or cited as being used in 13 searches, with the most by users of Reddit (n=4), Facebook (n=3) and participants going directly to a news site (n=2). Only one participant mentioned that he looks at the "most-viewed" section of a news site. Instead, participants who trusted the crowd more commonly narrowed their search by considering the "upvoted" news items, such as those that rise to the top on Reddit. Representative comments from two Reddit users include:

*The votes do factor in because I'll trust that other people have validated it before me.*

*If these people say it was really good and interesting, it must be...I'm going with the crowd.*

Participants who started their search on Facebook considered stories that are most shared and/or liked, as illustrated by the comment:

*Usually if a bunch of people share it I'll click on it because the more people that share it the more trustworthy it is I guess.*

Participants trusted friends both to find news and interpret news, as illustrated by the following two think-aloud comments:

*I usually just find my closest friends – I'll stop and read.*

*Coming from someone I know, him explaining [news] is better than having the news do it.*

The majority of searches in which trusting friends was used or cited as typically being used started on social media and social news sites. The same was also true for searches in which trending was mentioned as a factor used to narrow down items to consider.

Participants rarely gravitated toward “trending” items on traditional news sites, just as they almost never looked at those that were most-read or most-shared on them.

*Criteria Used or Cited to Evaluate News Outlets*

Table 18 shows the frequency with which students used or cited typically using various criteria to evaluate a news outlet. Students often used or cited more than one such criterion during their search.

**Table 18. Results: Criteria used/cited to evaluate a news outlet**

<b>Indicator</b>	<b>Participants*</b>	<b>Searches**</b>
Perceived outlet reputation or prominence	75.7%	47.3%
Perceived fairness/balance/lack of bias	59.5%	37.8%
Breadth/exposure to variety of viewpoints	59.5%	40.5%
Authoritative source on topic	48.6%	25.7%
Identifies and/or links to sources	40.5%	20.3%
Perceived accuracy	40.5%	21.6%
Posts news in timely manner	35.1%	18.9%
Usability/visual appearance	35.1%	21.6%
Familiar journalist	29.7%	14.9%
Quality of writing	27.0%	17.6%
Friends less reliable than news organization	21.6%	10.8%
Use of editors/edited content	13.5%	6.8%
Site domain (.com, .edu, .gov)	10.8%	5.4%
Provides niche news	5.4%	2.7%
Aligns with beliefs	5.4%	2.7%

\* Percentage of participants employing a strategy or factor during a search and/or citing the strategy/factor during the think-aloud narrative or interview in at least one of two searches

\*\* Percentage of all searches in which participants employed a strategy or factor during a search and/or cited the strategy/factor during the think-aloud narrative or interview

Only three of the 15 criteria for evaluating news outlets tracked were used or cited as typically used by more than half of participants and in over one-fourth of searches.

When evaluating news outlets, participants most often considered perceived reputation or prominence. Participants commented that they perceive legacy, “brand-name” news outlets as being credible, as illustrated by the following comments from two participants:

*NBC is a major network.*

*The name behind [the New York Times] definitely carries a lot of weight. Better than, oh yeah, I went to TMZ and looked up entertainment news. I went to the New York Times and looked up some entertainment news.*

In several searches, participants made credibility judgments based simply on surface-level evaluations of keywords in a news outlet’s name. In a Google search for news about Coachella, one participant clicked on the first source listed, *The Los Angeles Times*. Instead of commenting on the specific content produced by the newspaper or even its reputation as the newspaper of record in Los Angeles, the student said that “Anything that says Times to me is definitely credible.”

Participants tended to trust the reputation that brand-name outlets had earned over time and relied on others to vet sources for them. Representative comments from two participants included:

*[60 Minutes] has been around for awhile. A lot of people trust it.*

*I deem [CNN] to be fairly credible. It just seems more universally accepted.*

The next two most-often-used criteria to evaluate news outlets were breadth/exposure to a variety of viewpoints and perceived fairness/balance/lack of bias. Participants used or cited perceived fairness and balance as criteria to justify why they gravitated toward certain news outlets and the lack of it or bias for why they stayed away from others. Most of the 30 searches in which participants used and mentioned breadth and exposure to a variety of viewpoints referenced sites that aggregate content from around the web such as Google (n=8), Reddit (n=4), Twitter (n=2), Facebook (n=2) and individual users of *RealClearPolitics*, *Newser* and *The Daily Beast*. A Reddit user commented that,

*Every interest is in some way or form represented on there.*

One common theme: Participants preferred a website that collects news from around the web to visiting individual news outlets. Representative comments from three participants included:

*I'm not going to type in CNN.com.*

*I don't go to NYTimes.com and see what their headlines are. I'd rather see a lot of different stuff.*

*The reason I like [RealClearPolitics] is it gives you sources from all over the internet. I don't have to go to New York Times. I don't have to go to Washington Post. It's all the popular stories at one site.*

Nearly half (48.6%) of participants mentioned authoritative source on topic as a criteria for evaluating a news outlet in at least one search. One participant considered a Tumblr blog an authoritative source because it is the “go-to place...the central media source that people use” for news about a niche fashion topic. When considering a story about British soccer, another commented in her think-aloud narrative that,

*It seems very credible to me because this is the BBC and this is happening in England.*

More than 4 in 10 (43.2%) participants used or cited perceived accuracy as a news outlet evaluation criterion. More than 4 in 10 (40.5%) participants used or cited the indicator identifies and/or links to sources, as illustrated by the comment:

*[The Daily Beast] is less credible than the Washington Post because they seem to be getting their information from several different sources. And sometimes the sources have names that I haven't heard of before.*

Less than one-third of participants used or cited familiar/trusted journalist. One of the few participants who evaluated a news outlet based upon the perceived credibility of its writers commented that,

*Scientific American is a little more credible because the writers usually have some scientific background.*

Quality of writing and use of editors or edited content were rarely cited. One of the few participants who mentioned the importance of content being reviewed by editors said Blogspot or Tumblr were not credible platforms because they are “run by individual people who don't have people fact-checking for them.” Only one mentioned the importance of news outlets doing original reporting, commenting that:

*I feel like a lot of times when I'm reading articles on other sites they will copy and paste what the New York Times said and use their content as their own.*

#### *Criteria Used or Cited to Evaluate News Items*

Table 19 shows the frequency with which participants used or cited the use of various strategies and criteria to evaluate news items.

**Table 19. Results: Strategies and criteria used/cited to evaluate news item**

<b>Indicator</b>	<b>Participants*</b>	<b>Searches**</b>
Trustworthiness of news outlet	81.1%	55.4%
Content of headline***	50.0%	34.8%
Authoritativeness of sources cited	48.6%	32.4%
Authoritativeness of content producer	48.6%	27.0%
Factuality/opinions***	38.9%	25.8%
Depth of reporting***	36.1%	21.2%
Existence of attribution	29.7%	16.2%
Usability/visual appearance	27.0%	27.0%
Checked multiple sources for comparison	24.3%	12.2%
Clicked through links in news item****	16.2%	15.8%
Existence of content producer name	16.2%	8.1%
Prominence or placement/rank on site	16.2%	9.5%
Assessed evenhandedness/balance***	13.9%	9.1%
Checked for existence of links in news item****	11.8%	7.0%
Social recommendation	5.4%	2.7%

\* Percentage of participants employing a strategy or factor during a search and/or citing the strategy/factor during the think-aloud narrative or interview in at least one of two searches

\*\* Percentage of all searches in which participants employed a strategy or factor during a search and/or cited the strategy/factor during the think-aloud narrative or interview

\*\*\*For participants, n=36; for searches, n=66

\*\*\*\*For participants, n=34; for searches, n=57

Only 2 of 13 tracked criteria for evaluating the credibility of a news item were used or cited by more than half of participants and in over one-third of searches.

Evaluating trustworthiness of the news outlet was the most-often used news item

evaluation criteria. Representative of the calculation participants made in assessing an article's credibility was the comment:

*After choosing the New York Times, I assumed that whatever I saw there would be credible.*

Some participants seemed to be at a loss to determine how to evaluate a news item and thus relied on the news outlet's reputation, as the following examples suggest:

*I try to stick to CNN because CNN has never screwed me over before. There's not really a good way to figure out if [this article] is credible or not. I just look at the source and I trust CNN for the most part.*

*I don't know about credibility because I did not read the story. I'm not sure if they had concrete information about [the Boston bombing] attack...I genuinely trust the Huffington Post as a credible source.*

The latter participant failed to mention that the article on *The Huffington Post* identified *Reuters* as the original source. Other participants seemed to be aware of the limitations of relying solely on the outlet's reputation when determining a news item's credibility.

*Generally I just trust MSN. That's probably a bad decision, just trusting things. But because it's such a simple, straight-forward story I thought I'd trust what MSN says.*

After selecting a news item about the television show the X-Factor, one participant asked the researcher, "Is this credible?" displaying a lack of confidence in her ability to identify credible news. On her second search, when asked how she rates the credibility of the information included on Google, the participant answered, "It's always been reliable for me. I always find what I'm looking for." When asked how she evaluates credibility, she again responded that "I think it's really good. I always find what I want." She was unable to share specific reasons – such as authoritative sources, in-depth information or familiar journalists – why the information was credible, instead relying on the vague notion of finding an answer that was suitable. She later explained that,



*I always look at E! Online so I always believe what's on here but maybe that's not a good thing, I don't know.*

The second-most-common news item evaluation criterion was evaluating content of the headline. Nearly half of participants evaluated the authoritativeness of sources cited. These participants paid attention to whether a news item cited experts, such as “the head person for a study,” or “just some random person.” Two students commented that they “wanted to see people who were directly linked to the event,” and “wanted to hear [information] from an official and not just a bystander.” Checking for authoritative sources was particularly common for participants who looked at news items summarizing research, as illustrated by the think-aloud comment:

*I'd be skeptical about this article and look for quotes from people who published these studies.*

Most participants did not check for the existence of attribution, instead making more surface-level evaluations.

*I didn't do a very thorough investigation. Within the first two paragraphs they talk about specific people. They have quotations. They cite a person and her age.*

The vast majority of participants who checked for the existence of a content producer's name went on to evaluate the authoritativeness of that producer. Participants who evaluated authoritativeness read biographical information about the journalist at the end of articles or in rare cases did their own research.

Most participants also did not assess the factuality or opinions of news items. Participants evaluated depth of reporting, a criterion used by just over one-third of participants, by considering factors such as length, explanation of terms and use of statistics.

Roughly a quarter of participants checked multiple sources for comparison. Instead of evaluating a news item solely on its own terms, these participants checked to see how – or whether – other news outlets were covering the same story and cross-referenced articles. One noted in his think-aloud narrative that he likes to check a conservative and liberal viewpoint on issues, explaining that,

*I like to cross-check things. If I'm reading a story I'll look at different websites to see if there's a similar story up there...It's better for me as a news consumer not to just stick to one site all the time.*

Few clicked through links in a news item or checked for the existence of links in a news item when they were present. One participant who clicked on a link commented:

*I read this and it said 'Tells Sports Illustrated.' I knew that they would have the actual interview; this [blog post] would just have snippets.*

A representative comment by a participant who did not click through a link:

*The cool thing about Newser is that it tells you everything that's been happening. But when you click on it it gives you like two paragraphs and it's it. You don't have to read the whole article.*

Few participants considered prominence or placement on a news site as a criterion for evaluating a news item's credibility. Also rare was assessing the evenhandedness or balance of news items, with several participants noting their skepticism about the idea of objective reporting, as illustrated by the comment "I know that [this article] can't be perfect, objective and have all of the information."

*RQ4 asked: How aware are students of their choices when accessing news online that shape what they consume?*

*Awareness of Strategies, Factors and Evaluation Criteria Measured During Lab News Searches*

A primary focus of this study was to identify how news literacy curricula might better inform students of the ways in which their choices while accessing online news

potentially affect what they consume. In addition to identifying the extent of participants' use of 31 such search strategies, factors and criteria, this study tracked awareness of their use. For lab searches in which a participant either used or indicated typically using a particular criteria or strategy, Tables 20-22 show the percentage of instances in which each strategy was:

- Cited while being used during the think-aloud narrative (Column A)
- Cited only after its use in the post-search interview (Column B)
- Cited as being generally used during news searches without being used during the lab session (Column C)
- Used during the search without the participant mentioning doing so (Column D)

Participants who mentioned during the think-aloud narrative their use of a strategy, factor or criteria demonstrated a more conscious level of awareness than those who cited its use only in the post-search interview. Use of a strategy or criteria during a search without mention of doing so suggests its unconscious use, which demonstrates a lack of awareness. The tables present these results in descending order of the percentage of unprompted narrative references to strategies used.

**Table 20. Participant identification of search strategies/factors used to filter news**

Indicator	% of searches indicator used or cited as generally used			
	A	B	C	D
Considered news outlet when presented options by portal site*	92.1%	0.0%	7.9%	0.0%
Friend's recommendation	49.7%	33.1%	8.6%	8.6%
Social currency in peer group	37.3%	31.3%	31.3%	0.0%
Top-ranked/listed stories	27.3%	22.7%	4.5%	45.5%
Crowd's recommendation	23.3%	46.0%	30.7%	0.0%
Trending topics	22.1%	33.6%	22.1%	22.1%

A= Cited use of strategy/factor during narrative

B= Cited use of strategy/factor during interview

C= Cited use of strategy/factor in general though not used during search

D= Strategy/factor used during search without participant citing its use

\* For participants, n=28; for searches, n=45

The vast majority of participants who employed the strategy of considering the news outlet that published the item when presented options by a portal site (for example, a list of news items on Google News, Twitter and *Real Clear Politics*) mentioned doing so during their think-aloud narrative. Each of the other strategies or factors for filtering news was contemporaneously identified in less than half of the searches involving participants who use them. Participants cited relying on the crowd's recommendation or trending topics as factors actually used in their search to filter items during their post-search interview in a higher percentage of searches than did so during their narrative. Some participants who used the following strategies did not indicate recognition of doing so at any time during the lab session: Going to items that are top-ranked or listed stories, trending topics, or have been recommended by a friend.

**Table 21. Participant identification of search strategies/factors used to evaluate news outlets**

Indicator	% of searches indicator used or cited as generally used			
	A	B	C	D
Familiar journalist	36.2%	27.5%	36.2%	0.0%
Authoritative source on topic	31.5%	26.5%	42.0%	0.0%
Site domain (.com, .edu, .gov)	25.5%	0.0%	74.5%	0.0%
Quality of writing	22.2%	11.1%	66.7%	0.0%
Perceived outlet reputation or prominence	20.0%	25.7%	54.2%	0.0%
Friends deemed less reliable than news organization	12.8%	12.8%	74.3%	0.0%
Perceived accuracy	12.5%	12.5%	75.0%	0.0%
Breadth/exposure to variety of viewpoints	10.1%	10.1%	79.8%	0.0%
Perceived fairness/balance/lack of bias	7.1%	7.1%	85.7%	0.0%
Identifies and/or links to sources	6.9%	20.1%	66.2%	6.9%
Use of editors/edited content	0.0%	20.6%	79.4%	0.0%
Aligns with beliefs	0.0%	50.0%	50.0%	0.0%

A= Cited use of strategy/factor during narrative

B= Cited use of strategy/factor during interview

C= Cited use of strategy/factor in general though not used during search

D= Strategy/factor used during search without participant citing its use

Lab participants commented on how they evaluated a news outlet in general rather than how they did so during the lab search significantly more often than is the case with respect to the indicators relating to the initial filtering strategies or evaluation criteria for the news items considered. Participants as often or more cited using 8 of the 12 indicators they used to evaluate news outlets only during their post-search interview rather than during their narrative. Overall, once participants accessed a news outlet during a search, they exhibited less contemporaneous recognition of strategies or factors used to evaluate

it than they did with respect to those used to initially filter items or to evaluate the news item itself.

**Table 22. Participant identification of search strategies/factors used to evaluate news items**

Indicator	% of searches indicator used or cited as generally used			
	A	B	C	D
Social recommendation	100.0%	0.0%	0.0%	0.0%
Checked multiple sources for comparison	66.4%	11.5%	22.1%	0.0%
Factuality/opinions*	64.7%	35.3%	0.0%	0.0%
Clicked through links in news item**	55.3%	11.3%	0.0%	33.3%
Existence of attribution	50.0%	50.0%	0.0%	0.0%
Existence of links in news item**	50.0%	50.0%	0.0%	0.0%
Authoritativeness of content producer	47.3%	47.3%	5.4%	0.0%
Authoritativeness of sources cited	41.7%	58.3%	0.0%	0.0%
Trustworthiness of news outlet	41.5%	58.5%	0.0%	0.0%
Prominence or placement/rank on site	28.4%	56.8%	0.0%	14.7%
Depth of reporting*	21.2%	78.8%	0.0%	0.0%
Existence of content producer name	17.1%	65.9%	17.1%	0.0%
Evenhandedness/balance*	16.5%	83.5%	0.0%	0.0%

A= Cited use of strategy/factor during narrative

B= Cited use of strategy/factor during interview

C= Cited use of strategy/factor in general though not used during search

D= Strategy/factor used during search without participant citing its use

\*For participants, n=36; for searches, n=66

\*\*For participants, n=34; for searches, n=57

Overall, once participants accessed a news item, they indicated their awareness of more of the strategies/factors they used to evaluate it during their think aloud narrative in a higher percentage of searches than those used to filter news or evaluate news outlets. All participants who use social recommendation as a factor in evaluating a news item

contemporaneously mentioned it. However, for 9 of the 13 strategies/factors to evaluate the particular news item accessed listed in Table 22, as many or more participants acknowledged using them during their post-search interview than their narrative. Participants cited their use in general of the listed strategies/factors instead of actually using them during the search in a smaller percentage of searches overall than was the case with those relating to the filtering of news or news outlets to access.

In searches in which participants clicked through links in the item to access sources cited and used the prominence, placement or rank of an item on a site to assess its merits, they did not acknowledge doing so at any time during the lab session 33.3% and 14.7% of the time, respectively.

*Awareness of Selected Concepts Relevant to News Literacy*

Participants were asked questions about their awareness of selected concepts relevant to digital news literacy that were not specifically tracked during their lab news searches. Results are shown in Table 23.

**Table 23. Number of participants and searches, and percentage of correct responses to select news literacy questions**

Indicator	Participants		Searches	
	No.	Correct	No.	Correct
Ownership or operator of news outlet	37	10.8%*	74	29.7%
Origin of outlet’s content (own or others)	20	80.0%*	29	86.2%
Search Engine Optimization	37	10.8%	NA	NA
Promoted/paid social media (Twitter, Facebook) posts	14	78.6%	NA	NA

\* Provided a correct answer for each instance in which indicator applies

*Ownership.* Lab participants were largely unaware of who owns the news outlets they use to begin their searches. Representative comments that illustrate participants’ lack of awareness included:

*Is it something news network? I'm not sure who runs [CNN].*

*There was a movie about [Facebook] but I can't remember.*

Incorrect guesses and answers, such as the following two, were also common:

*Probably some shady corporation [owns BBC] ...Rupert Murdoch is a good guess. Yeah, I'm not sure.*

*I'm not sure if [Yahoo] is an independent company. There's probably a parent company. Pepsi and Coke own everything.*

None of the participants who began their news search at Twitter knew its ownership status. No Reddit user identified its owner, Conde Nast. A participant who was not aware of who owned *The Daily Beast* commented:

*I wish I did know more because I remember having asked myself what is the Daily Beast many, many, many times but never really looking into it.*

Given participants' lack of awareness about ownership status, they unsurprisingly mostly tended to know little about the owners' objectives for their news outlets and possible motivations for influencing content. Just 17 of 37 participants (45.9%) could identify any possible objective that owners had in providing news. Those who provided an answer showed little awareness of how news outlets define their target audiences, coverage areas or editorial missions. They used generic phrases such as "to get out the news," "to be unbiased" and to "give quick updates." A *BuzzFeed* user cited its attempts to be humorous but did not mention the publication's stated aim to create viral posts with "click bait." A *Politico* reader was one of the few students to provide a nuanced answer to the question of the publication's objectives:

*[Politico is] a hub for political news that provides in-depth analysis – I see articles here I wouldn't see other places.*



When asked, the majority of participants could not point to any specific potential influence media owners might exert on their publications. The most common response (by eight participants) was that the owner could influence the publication toward a bias in favor of a political agenda to sway voters. Representative comments from two participants included:

*If [Yahoo] they wanted to sway something they have a lot of influence.*

*If the owner of Google were politically active he could conceivably try to promote information that goes along with [his interests].*

Seven participants noted that websites that rely on algorithms to determine what news to display could devise a way to promote their own content or content from partner news organizations and bury content from competitors – although the majority of these participants did not know if this actually happened as a practice. Comments from two participants included:

*Yahoo [content] is all the way at the bottom [on Google search results]. They don't want you going to Yahoo to look up their stuff.*

*Microsoft has a personal investment [in MSN] – I seriously doubt they would promote a new Mac product.*

*Origin of outlet's content.* The vast majority of participants who began their news search at an outlet that produces at least some of its own content (excluding sites such as Facebook, Twitter and Google) correctly described whether it relies mostly on content created internally or on others' work (including curation and summarization).

Representative comments from two participants included:

*A lot of what's on the Huffington Post is based on reporting from [other] news organizations.*

*I feel like a lot of times when I'm reading articles on other sites they will copy and paste what the New York Times has said.*

Several other participants correctly noted that news outlets like *The New York Times* and *The Washington Post* mostly rely on their own reporters but sometimes publish wire copy. Only three of seven Yahoo News users, however, knew of its heavy reliance on outside news outlets such as *The Associated Press* and *Reuters* to populate its home page. No one mentioned Yahoo's partnership with *ABC News*.

*Search Engine Optimization.* Only four of 37 (10.8%) participants correctly defined search engine optimization (SEO). Three correct definitions included:

*If you have certain words on websites they will appear higher in the search.*

*Using keywords most people are going to be typing in to make it easiest to find you and increase your traffic.*

*Developing techniques to get a page to the top of the list.*

Three of the four participants who answered correctly said they were "very interested" in technology news and three of the four used a search engine at least once during their news search. More than half (59.5%) of the participants had never heard of the term SEO and 29.7% defined it incorrectly.

*Promoted social media posts.* Eleven of 14 participants who used a social media site to start their lab news search correctly identified the term "promoted Facebook/Twitter post" – a post that a company or organization pays the company to feature in its news feed. A participant who most often begins her news search on Facebook noted in response to a question about Facebook's financial model that,

*Companies pay to get their stuff posted on people's news feeds. I've noticed that more recently.*

Participants were not explicitly asked to identify sponsored or promoted posts as they searched, but several did so without being prompted. A Reddit user said during his think-aloud session, “You skip the first one because it’s always an ad.”

#### *Awareness of How Portals and News Sites Select and Organize Information*

*How news items are selected.* Participants who began their news searches at portal sites were largely aware that proprietary algorithms help determine how news is selected and displayed, but their awareness of specific algorithm elements was limited.

Representative comments from four participants included:

*I know there’s an algorithm involved [in Facebook] but I don’t know what it entails.*

*I’m sure that there could be an algorithm because those people [at Yahoo] are smart, but I’m not sure how it works.*

*I’m not sure [how Google determines search results] but I’d think that technology and computer science would be involved because of the volume of information.*

*I don’t know how the [Reddit] algorithm works.*

While nine of the 11 participants who started at Google Search correctly noted that its algorithm takes into account number of views/hits when determining page relevancy, only three mentioned that how recently a page was created or refreshed affects search results. Just one of 4 Google News users knew that its algorithm considers a news outlet’s prominence, commenting that:

*[Google News] usually lists bigger names. They won’t put some obscure local news site when they have the New York Times.*

No one mentioned that the algorithm considers what news prominent outlets cover and where they place articles on their home page. One user was uncertain and two incorrectly

believed that the news outlet was not a factor in how Google News determines items to display.

Participants who began at portal sites were typically unaware of the role that human editors play in shaping news item selection. Only one of eight Twitter users correctly noted its use of human editors to interpret ambiguous language users input and help determine the meaning and context of search terms that quickly spike in frequency. Five were (incorrectly) certain that Twitter had no human editors. Representative comments from two participants included:

*It's all computer frequencies and algorithms.*

*I don't think there's anyone on the other side deciding what tweets show up and what don't.*

All five Reddit users correctly noted its heavy reliance on subreddit moderators to include or exclude news items.

Participants who went directly to an outlet that produces at least some of its news, such as *The Washington Post*, *Newsweek*, *The Huffington Post* and Yahoo News, were largely aware that editors help determine what appears on these news sites. All but one of seven Yahoo News users correctly identified its use of editors to help determine article selection and placement. A *NPR* user showed awareness of the editor's role with the comment:

*[NPR] has a staff of people who write for them – they have people assigned to different sections. Those people find stories that are relevant. Their stories go through an editing process where things are made better and then published.*

Most participants, however, were unaware of the news selection process, with many noting that they had never thought about it before. Those who provided answers

often responded that editors select the most controversial or outrageous news.

Representative comments from two participants included:

*“I don’t know how [The Washington Post] chooses -- the most shocking news?*

*Shock news at the top and more serious stories at the bottom.*

Popularity was a commonly cited factor in the news selection process, as illustrated by comments from two participants:

*I don’t know much but I assume [CNN] selects the most popular articles....they put these up here because they want traffic.*

*Mostly editors are looking at what they think people will want to see.*

Few mentioned that editors may also consider the relevance and importance of news to their specific audiences, rather than focus exclusively on that which is attention-grabbing for its controversy or shock value.

*How news item hierarchy is determined.* Participants who began their search at a portal site were typically aware that a news item’s timeliness and popularity affect its ranking or placement. However, some participants were unaware of how popularity was measured. Others wrongly assumed that timeliness and popularity were the only factors in news item placement on a page. Factors other than timeliness or popularity were rarely cited as influencing news item hierarchy.

All seven participants who began their news searches at Facebook were aware that the hierarchy in the News Feed takes into account timeliness and popularity of a post, and how often users either visit a friend’s page or communicate with them through Facebook. Seven of eight Twitter users were aware that tweets are generally shown in chronological order, and the vast majority noted that posts that are frequently retweeted remain high in the news feed. Two correctly noted that the velocity of the surge, or, as

one student mentioned, “The number of times a word comes up in a certain amount of time,” helps determine what is trending. Three of four Google News users correctly noted that a news item’s timeliness/freshness affects where it appears on the results page.

All five Reddit users correctly said that how recently a post was submitted and how many “upvotes” it gets helps determine its hierarchy on the page. Representative comments from two participants included:

*The way Reddit is, the more something is upvoted, the more likely I am to see it. You won’t find the scientific articles up high.*

*Reddit takes the highest-ranked [news items] from all the [Subreddits] I subscribe to.*

Several Reddit users incorrectly answered that the sheer number of an item’s upvotes or net votes (upvotes minus downvotes) is the only deciding factor in rankings.

Representative comments from two participants included:

*If a story gets enough upvotes it goes to the front.*

*As far as I know, the most net votes gets to the top. I’ve never looked into that.*

No one mentioned that the first people to vote up or down on an item wield the most influence. One participant noted the benefits of being a “power user,” saying that “if you’re a consistent submitter-user your [posts] are going to be prized more.”

Five of seven Yahoo News users incorrectly stated that the aggregate number of clicks a news item receives by Yahoo users – rather than an individual’s data – is what most significantly determines its placement. Two participants mentioned that companies can pay Google for prominence in users’ search results, but one participant said she did not know if this applied to “companies like *The New York Times*.” One participant incorrectly stated that Google News partners with news outlets and charges them for prominent placement on its site. Participants who went directly to a news site did not

demonstrate a nuanced understanding of why certain news stories are given prominent placement. Several participants incorrectly noted that news outlets like *Politico*, *CNN* and *BuzzFeed* simply post news items in chronological order.

No one mentioned that Facebook's ranking algorithm affords certain types of posts, such as relationship status, greater weight. No one identified Twitter's consideration of a term's previous appearance on the trend list and whether it circulates within or spans across clusters of users. Only one of four participants explained that Google News is organized around clusters of news topics.

*News personalization and customization.* Participants who began their news searches at portal sites were more aware than those who started directly at news outlets that news can be personalized based on their media habits and that they can customize news to fit their interests. Participants' awareness of how news is personalized was often limited, as illustrated by the comments:

*Facebook keeps track of something I guess.*

*Google collects data from what you search...I'm sure that helps them somehow.*

Google Search users were the most aware of personalization, with seven of 11 noting that Google tracks their search and web surfing history to help determine the results to display. Among the comments:

*When you Google 'jobs', Google knows if you are looking for a job or Steve Jobs based on past searches.*

*I've been told that Google saves all your past searches and stuff that will appeal to you most based on past searches comes up first.*

One Google user was unaware of whether it tracked user search and browsing history, while the other three did not think that happened. Google News users were generally not

aware that the site delivers personally relevant news based on an individual's search history and articles previously clicked on. Among the representative comments:

*I know they tailor your search results; I'm not sure about the news.*

*I feel like [Google News] gives me the general news [and does not tailor it toward user preferences].*

Only one of seven Yahoo News users responded that the site tracks users' past news searches. Two had never thought about whether Yahoo pays attention to past searches when delivering news. A third participant indicated that Yahoo tailored stories to users' interests but did not know if this was geared to the individual or to users in the aggregate (Yahoo personalizes results based on a user's demographics). Three participants confidently but incorrectly said that Yahoo pays no attention to past news searches. Among those comments:

*Everyone sees the same thing.*

*I don't think it works that way – hopefully it doesn't.*

One participant correctly noted that Yahoo's decisions about presenting news "has something to do with people who sign in," but neither he nor other seven students specifically noted that the site collects user information such as age and gender.

Six of 11 Google Search users and three of four Google News users responded that a user's location is among the click signals used to determine search results. By contrast, just two of seven Yahoo News users were aware that the site tracks users' location.

Just one participant correctly responded that Twitter personalizes news feeds by suggesting others to follow who have similar interests or that are similar to users they already follow. One participant said of Twitter,



*It's very narrowed down to only my friends. There's no outside view to jump in and be on my Twitter page.*

Several Reddit users also identified the so-called “silo effect” or “hive mindset” without being prompted, with one commenting that:

*There tends to be libertarian leanings. It's a confirmation bias. It supports what I think anyway. I'm conscious of that. To avoid that I use other news sources.*

Reddit, Facebook and Twitter users were aware that they can customize their news intake by subscribing to subreddits or following people on the social media sites. However, Reddit users were unaware of how the site monitors users' personal preferences and behaviors. Representative responses from two participants included:

*Besides subscribing and unsubscribing [Reddit] just shows you stuff randomly. Reddit may track your habits but I don't think it relays that back to you. It's the same front page for everyone.*

*I think most people see the same thing.*

No Facebook user mentioned the ability to control News Feed settings by hiding or unhiding certain types of stories, pages or apps. Google News users did not mention that the site allows users to customize the news sources they read.

In only 7 out of 24 possible<sup>xix</sup> searches did participants starting directly at a news outlet correctly identify whether it tracks user data to personalize content. Two of those seven participants correctly noted that sports sites – *ESPN* and *Bleacher Report* – allowed them to identify their favorite teams and receive customized content. A *New York Times* user correctly noted the publication's opt-in customization policy. Of the 17 participants who were unaware if the news outlet at which they begin a news search personalized content, the vast majority incorrectly thought it did not do so in any way. This included participants who visited legacy news sites such as *CNN* and *The New York Times* and

those who went to online-only sites such as *The Daily Beast* and *The Huffington Post*.

Two representative comments included:

*I have no idea – I don't think [CNN personalizes content]. The news is the news.*

*[Newser] doesn't look at me specifically.*

JM said confidently (and incorrectly) that over a span of months visiting *BBC*, “It hasn't personalized anything for me.”

#### *Profiles of News Searches from Lab Participants with Varied Levels of Awareness*

Following are descriptions of news searches conducted by six participants who ranked near the bottom and top of all lab participants in terms of conscious awareness of the search strategies and evaluation criteria tracked. In addition to awareness, information is provided about the participants' news habits, and the extent to which they demonstrated higher-order thinking as they accessed, filtered and evaluated news.

#### *Three Participants with High Levels of Awareness*

##### Participant 1: Heavy news consumer, narrow interests, careful evaluator of authority

Participant 1, a 19-year-old in the School of Public Health, typically spent anywhere from 50 minutes to 2 hours daily consuming news, mostly through his computer (31 to 45 minutes) or television (16 to 30 minutes). He strongly agreed with the statement that “I browse for news without a clear sense of what I'm looking for.” While he rarely looked for specific news items, he strongly agreed that “I only follow news about specific items that interest me.” A pre-med student, he was very interested in three news topics – science, health and education – and was mostly disinterested in other listed topics. He more often came across news while doing other things than went online

specifically to get news, and liked to receive news from other people and from technology.

Consistent with his survey response, he conducted both searches without specific news in mind. His first search began on Twitter. He paid close attention to the news outlet when considering which tweets to read and considered many news items in his Twitter feed. In this think-aloud narrative he said:

*I look usually for new studies. I work in a research lab in exercise or brain health. I look for some relevance to brain health and effects of exercise.*

Participant 1 did not pay attention to top-ranked or trending stories on either search. In his Twitter search he looked for news with social currency, commenting during the think-aloud that, “I wouldn’t find this [article] as useful in everyday conversation as I thought.”

Participant 1 did not base his evaluation of news outlets in either search on perceived reputation or brand credibility, instead making judgments based upon the authoritativeness of the news outlet, the quality of writing and depth of reporting. On Twitter, he found what he considered a trusted and authoritative journalist who wrote for *Scientific American*, which he said “is credible because the writers usually have some scientific background.” He also paid close attention to the authoritativeness of sources cited, commenting that “I find this credible – NIH and *New England Journal of Medicine*.” In evaluating the article he selected from *Scientific American* on wearable technology, Participant 1 liked that the article “stuck to the facts and didn’t go overboard with assertions.”

Participant 1’s second search began on *The New York Times*. He went directly to the health page and considered a range of articles before finding an article of interest on

the effects of exercise on the brain. He clicked through several links in the article. When asked why he did this, Participant 1 replied,

*Curiosity – where is this author getting this from? Why is the author making these conclusions?*

During his think-aloud narrative, he criticized *The New York Times* article for “lacking scientific terminology.” He said he would be skeptical about the article and “look for quotes from people who published these studies.” He compared the article to the original scientific journal study abstract from PubMed, eventually selecting the latter as the credible news item. Participant 1 read both news items in their entirety and was so engrossed in the material that the researcher had to remind him twice about the lab session time parameters. When asked about his prior interest in wearable technology and research on brains and exercise on a Likert scale of 1-5, Participant 1 said 4 and 5, respectively.

Participant 2: Heavy news consumer, broad interests, avidly cross-references

Participant 2 typically spent between 50 minutes and 1 hour and 45 minutes daily getting news from a variety of platforms, split between her computer (31 to 45 minutes), cell phone (16 to 30 minutes), and word-of-mouth and print (1-15 minutes each). She had wider-ranging news interests than Participant 1, indicating on the survey that she was very interested in arts, education, health, international news and sports, and somewhat interested in a host of other topics. The 19-year-old in the College of Arts and Humanities accessed news throughout the day – going online specifically to get news once a day and coming across news while doing other things more than once a day. She liked to actively get news and receive news from other people, and she strongly agreed that she had a clear idea of what she looked for when searching for news.

Her first search began on *BBC.com* without specific news in mind, described by her as “looking for anything that looks out of the ordinary.” Participant 2 read headlines aloud and clicked on the second news item on the home page, an article about the Bangladesh factory collapse. During the post-search interview, she said she selected this article because “Bangladesh doesn’t get much coverage.” She read quotes aloud to check for attribution in both searches. Participant 2 often clicked on links to verify the veracity of information. When considering a *BBC* article on the earth’s core, she clicked on a link and was frustrated by receipt of an error message.

*Hmm. Broken link – that’s great. I have no way of checking the plausibility of that article.*

Participant 2 assessed the authoritativeness of sources cited, saying when she came across an expert quoted in the article during the think-aloud, “Cool, let me look at this guy.” She then did a Google search for “Agnes Dewaele,” the expert quoted, and was satisfied when she found the original study by Dewaele on which the *BBC* article was based.

*I’m trying to cross-reference what the article says with what the abstract said. It looks pretty similar. I don’t think they made any wild claims.*

She later said in the interview that,

*When I look at scientific articles, do they have any ideas that weren’t introduced by the scientists themselves?*

Participant 2 accessed and considered multiple news items to assess factuality. Saying that “I might come back to this [article] later,” she saved the earth’s core article in a tab, as she did with several other articles of interest. She said in the interview: “I want everything I’m interested in so I don’t forget when I come back.” She next clicked on an article in *BBC*’s English-language page about Iraq and then visited *BBC*’s Arabic home

page to gauge how the news item was being covered on both sites. “I’m going back and forth to see if there are any weird transitions.”

Participant 2 was turned off by what she deemed to be a vague headline and a sensational article, and thus decided to move her search to a news outlet associated with the Middle East. “Let’s see what *Al Jazeera* has to say,” she said while typing into Google “*Al Jazeera* Nouri al-Maliki.” She later explained during the interview that, “I wanted to see if across news agencies this story had the same urgency.” She clicked on the first article on the search results page and again looked for quotes and sources cited. She selected the *Al Jazeera* article, saying that, “I like that this one is shorter and contains less secondary meddling.”

Participant 2 started her second search on Google with a specific goal of searching for news about the European soccer club Bayer Leverkusen. She first surveyed the results page to assess her options. When interviewed, she explained that she looks at the way headlines are written – skipping the sensational ones – and then evaluates the credibility of the listed news outlets. During the think-aloud she described wanting to “find something that definitely isn’t sketchy,” later explaining that she avoids blogs that are “run by individual people who don’t have people fact-checking for them.” Participant 2 commented that Goal.com, one of the first news outlets listed, is “a little sensational.” She went directly to the source, the soccer club’s website, commenting that it is not impartial. When evaluating news outlets she relied on her own experiences with the sites, including their authoritativeness, balance and fairness, instead of perceived reputation or brand credibility. She characterized *The Daily Mail* as “The Daily Fail” because of its sensational and inaccurate coverage. Participant 2 again went to a top-ranked or list story

but as in the first search did not mention doing so in her think-aloud commentary or interview. She eventually selected an article from the Bleacher Report about a player who transferred soccer clubs. She refined her search terms and goals when she did not initially find what she wanted and took 18 and 12 steps, respectively, to select a news item. She read news items in their entirety during both searches (the researcher ended the first search because of time constraints).

Participant 3: Heavy news consumer, narrow interests, open-minded reader of aggregation sites

Participant 3, a 21-year-old in the College of Arts and Humanities, spent between 1 hour and 20 minutes and 2 hours daily getting news, primarily from the computer (46-59 minutes) but also from her cell phone (16-30 minutes) and word of mouth (16 to 30 each). She went online specifically to get news more than once a day and strongly agreed that she liked to actively get news and had a clear idea of what she was looking for when searching for it. She was very interested in business/economics and politics and was mostly disinterested in other topics.

Participant 3 received news primarily from aggregators, most often beginning news searches at *RealClearPolitics* or *The Daily Beast*'s "Cheat Sheet" without specific news in mind. She usually visits *RealClearPolitics* for both the morning and afternoon editions. A self-described policy wonk, she did not limit herself to reading just one political perspective on issues of interest.

*I'll look at the topic heads to see what interests me. They'll do left and right news stories. For economics I'm usually toward the right. But I'm into birth control issues, so I might look at that.*

Participant 3 narrowed down search items to consider by evaluating the credibility of the news source, commenting that “It’s *The New York Times*. So that’s pretty credible.” She added that,

*If I recognize the author on the front page I might read it whether or not I care about the topic.*

She recognized economist Paul Krugman and clicked on the link to his column. She prefers news items that “go with facts within the first few paragraphs” to those that start with opinions.

Participant 3 likes that *The New York Times* links to the original source of information “so you can get background on that source.” She clicked through a link in Krugman’s column that took her to an original economic study by the St. Louis Federal Reserve on which the column is based. “This is a legitimate source,” she commented. In selecting Krugman’s column as her news item, she finished by saying, “This is an op-ed but it uses credible sources and has data to back it up,” a commentary about both the authoritativeness of sources and the depth of reporting. Participant 3 later added in the interview that,

*I like to look through the links and see what they have to offer. It usually gives me background. The more links they have the more research they have done and in my opinion they are a more legitimate source.*

While Participant 3 considered only two news items (both from Krugman) during this first search, she was very thorough in reading the column and cross-referencing the analysis with the original research.

Participant 3 began her second search on *The Daily Beast*. She went directly to the “Cheat Sheet” column, a front-page feature that aggregates the day’s news. She began by saying, “For *The Daily Beast*, I try to be more careful because they tend to lean left.”



She looked through the top 12 items posted before clicking on the 13<sup>th</sup> item, a summary of an article on New York home prices. “At the bottom you can read the entire story,” Participant 3 said, aware that *The Daily Beast* often summarizes news that originates elsewhere. She again considered the reputation of the news outlet when narrowing down possible items to consider, commenting “The AP – that’s legitimate to me. So I’d read that article.” Participant 3 then went back up to the fifth link, a summary of a *Telegraph* article on a Dutch shooting, offering the narrative that,

*Sometimes I’ll read sources from other countries. They are usually providing different information. I’ll read stuff like the Telegraph. I’ve read them before and I consider them a legitimate source.*

Her comment demonstrated an interest in gathering different perspectives on news and showed that she evaluates news sources based upon personal experience rather than perceived credibility or reputation. Participant 3 clicked through to the original article from *The Telegraph*, selecting it instead of relying on *The Daily Beast*’s summarization. Participant 3 took only 5 and 7 steps, respectively, in her searches, but was thorough in evaluating the items she selected.

#### *Profiles of Participants with Low Levels of Awareness*

##### Participant 4: Passive news consumer, narrow interests, little rationale for search decisions

Participant 4, an 18-year-old in the College of Behavioral and Social Sciences, spent between 30 minutes to 1 hour and 15 minutes daily consuming news, split between her computer (16-30 minutes) and cell phone (16-30 minutes). She was “very interested” in crime and international news and mostly disinterested in other topics. She liked to receive news from other people and from push technologies. She went online specifically to get news just several times a week and came across news while doing other things

more than once a day. Participant 4 rarely went online specifically to get news and browsed for news without a clear sense of what she was looking for. These habits were evident during the lab session, as she seemed out of her comfort zone actively searching for news, as the lab tasks required.

Participant 4 began her first search on *The Washington Post*. When asked her reason for doing so she said that “It’s been around for a really long time,” it “seems traditional” and that it was delivered to her house growing up. She had limited firsthand experience evaluating the newspaper and instead relied upon perceived reputation and family endorsements.

Participant 4 first went to *The Washington Post*’s homepage but quickly selected the e-replica version of the print edition because she finds the website “chaotic.” She visits the Post’s website two to three times a week, often when she sees breaking news first on Twitter. “Sometimes I’ll click through to the *Post*, sometimes not,” she said. Student 4 surveyed her options on the *Post*’s A1 table of contents, explaining during her narrative that “I’m checking out if there’s anything going on but I don’t see anything.” After clicking on the second A1 article in the table of contents about gun control, she gave up on the e-replica version and returned to the *Post* website’s main front page. She then clicked on the movies, events and world tabs in quick order without any narration. She clicked on the fourth article on the world page about Pakistani President Pervez Musharraf and ended the task within 5 seconds by saying “I’ll choose this one” without explaining her decision.

When asked how she decided what to scan or read during her search, Participant 4 said she pays attention to article rank. When asked who determines articles rankings in

the A1 section, she said that she was not sure. She selected the Musharraf article because of its headline and accompanying photo but mentioned nothing about the story's content.

She said that,

*It just seemed like something I would want to read more about since I barely got a chance to skim it.*

When asked how she evaluated the credibility of the article she selected, Participant 4 responded,

*There's an author. The picture looks pretty intense. There are names and dates. I don't really see anything about it that would make it seem not credible.*

Participant 4 began her second search on *The Daily Beast*. She explained in the interview that her friends recommended the site and she continues to use it because "It's the easiest way to get the news." She finds the site "relatively credible" but said it is,

*Less credible than The Washington Post because they seem to be getting their information from several different sources – and sometimes the sources have names that I haven't heard before.*

While Participant 4 paid attention to the news outlets cited, her criteria was simply whether she had heard of an outlet. She did not investigate a source when she comes across an unfamiliar name.

Participant 4 went straight to *The Daily Beast*'s "Cheat Sheet" news aggregator, commenting that,

*I've never felt the need to use any of the other tabs because this pretty much summarizes everything for me.*

Participant 4 relied solely on the short news summaries written by *The Daily Beast* and never clicked through to view the original articles on which the summaries are based. She said in the think-aloud narrative that,

*Most of the times I skim through these. I don't really click on the sources they mention. Occasionally I'll look at the comments if something is really interesting.*

Participant 4 selected a Cheat Sheet summary of an article about the release of a school administrator's private e-mails. She quickly skimmed the summary, looked at several comments and said, "This is the article that I choose," again without any explanation. She explained when asked that she determined which news items to consider based primarily on their headlines. She selected the first news item she encountered and once again had little to say about how she evaluated its credibility:

*I don't know. I assumed it would be credible. I didn't click through the story – I didn't know the original source of information.*

#### Participant 5: Disinterested, impatient and impulsive news consumer

Participant 5, a 19-year-old in the College of Computer, Mathematical, and Natural Sciences, indicated on the survey that he spent an hour or more daily accessing news on his computer, and went online specifically to get news and came across news while doing other things more than once a day. However, in the post-task interview, he indicated that his news searches on Google, listed as his top starting place, most often were for "random things" and "not necessarily for news." Participant 5 spent no time accessing news on his cell phone. He was "very interested" in none of the listed news topics, and only "somewhat interested" in education, entertainment and lifestyle.

Participant 5 began his first search, conducted without any specific news in mind, at Google News, which he explained in the interview that he likes Google News because,

*It has everything. More so recently it's catered toward my news. It's become personalized.*

Student 5 said the credibility of the information on Google News is "hit or miss." When asked how he evaluates credibility, he said,

*I'll trust the Chicago Tribune for news more than blogs. Blogs, even though it could be written by a journalist, it could be someone's opinion.*

He relied upon perceived reputation of newspapers rather than personal experience.

Instead of firsthand evaluations of each political blog he encounters, he views them all as having untrustworthy characteristics.

Participant 5 said in his spare (five sentences and 35 words) think-aloud narrative that, "I'll look at top stories." When interviewed, he indicated being disinterested in the first article topic, the stock market, but being intrigued by the second, terrorism. Without surveying options on the page, he clicked through to the second story under top news about a ricin attack. "I'll look at this Mississippi man story," he said. Within 10 seconds he concluded that,

*I would say it's a credible story. It's Fox News. It seems like it's not from a blog or anything.*

He selected the news item without reading beyond the headline and the first paragraph.

Participant 5 said in the interview that,

*I saw [the article] was written pretty well. I saw Fox News at the top – they are a mainstream station that broadcasts all over America. It seems like a journalist wrote this.*

He based his evaluation about the quality of writing on only two or three sentences without explaining the criteria used. He evaluated the article based upon the perceived reputation of *Fox News* rather than on its content. Additionally, he simply noted that it appeared that a journalist wrote the article rather than evaluating the authoritativeness of the author – or even checking to see for sure whether a journalist produced the work.

Participant 5 said in the interview that,

*A lot of times I'll hear a topic. I'll go to Google and type in keywords and look at headlines.*

He later added that, “with the news headlines, the most recent thing is at the top.” He did little other than consider only the very top stories or read the headline during his Google news search. He made quick decisions, seeming to be intent on getting the task done as fast as possible. Participant 5 had been following news of the ricin attack but when asked to rate his interest in the story he said only 2 out of 5.

Participant 5 began his second search, again without any specific news in mind, on Facebook. He was immediately swayed by social recommendation, as he visited his friend’s Facebook page, where he came across an article about a West Virginia teenager who returned to school after having been suspended for wearing an NRA T-shirt.

*This is one my friend read. Let me just see if there is anything else. It’s from the Washington Times. I’d go with that.*

As with the first search, Participant 5 right away noticed the news outlet name and made an extremely quick evaluation based upon perceived news outlet reputation and friend’s recommendation rather than a detailed reading of the news item. When asked why he visited his friend’s page, he said he is “always early to comment” on news. He once again provided no evidence in the think-aloud narrative that he evaluated the content of the article. He said he had been following news of the NRA T-shirt controversy but had only a 1 out of 5 interest.

Participant 6: Infrequent, disinterested news consumer with no concern for credibility

Participant 6, a 21-year-old in the School of Public Health, spent between 20 minutes and 1 hour daily consuming news, mostly on her computer (16-30 minutes). She was “very interested” in none of the listed news topics, and only “somewhat interested” in health and sports. She strongly disagreed with the statements “I like to actively get

news,” “I like to receive news from other people” and “I like to receive news from technology.” She agreed that she only followed news about specific items that interested her and strongly disagreed that she liked coming across news she hadn’t thought much about before.

Participant 6 began her first search on Pinterest. She placed a great deal of trust in the crowd, as evidenced by her opening think-aloud comment that,

*I always go to the popular page because they will have a variety of things. And when I go to popular I know I’m guaranteed it will have interesting things because popular means that a lot of people liked them.*

Once on the popular page, she quickly scrolled through rows of photos. She then visited the Pinterest health and fitness page, commenting that “I like to eat healthy so I’m looking at food.” Lured by the headline and visual appeal, she clicked on a photo, which brought her to a Food Network article about healthy fats.

*This is Food Network. That’s credible because this is one of the top healthy web sites there is...I’d probably pin this to my page.*

Participant 6 did not closely read the story but rather assumed that because it was posted by the Food Network it was credible information. Her surface-level evaluation of the Food Network, based upon its perceived reputation, illustrated that she places a great amount of trust in others not only to help determine the news she accesses (on the popular page) but to help her form decisions about trustworthy news sources. Although Participant 6 referenced the Food Network as a credible source in her first search, she admitted in the interview that she rarely pays attention to who “pinned” a given photo. She added that, “It doesn’t need to be from a credible source for me to like it. I’ll still pin it.”

Participant 6 began her second search on Twitter. In the interview she explained that she doesn't follow news outlets, only her friends. "I don't get news unless one of my friends retweets something," said Participant 6, aware that she is completely reliant on others to filter her news. She commented in her think-aloud narrative that, "I usually just find my closest friends. I'll stop and read. I'll just scroll if I'm bored." Like Participant 5, she appeared eager to finish the search as quickly as possible. When she found a trusted friend, Participant 6 clicked on a link he posted to a column he wrote in *The Diamondback* student newspaper on students logging off Facebook forever. She explained that,

*My friend Tommy shows his opinion. He is retweeting a story he wrote. This would be a credible source.*

She added in the interview that she recognized *The Diamondback* because it is the campus newspaper, although she did not explain whether she considered it a credible source. Not only did Student 6 not closely read the column, she admitted in the interview that "Honestly, I didn't even see the topic until we clicked on it now."



## Chapter 6: Discussion

News literacy continues to evolve as an area of study. To maintain currency and relevance as a field, the critical thinking strategies and concepts required to be a discerning news consumer must be regularly reexamined as news production, distribution and consumption habits change. This study produced data to help news literacy educators design or adapt curricula and assessments.

### **Conceptual Framework for the Analysis of Results**

Educational experiences should build from an understanding of how people use media in their daily lives and news literacy lessons are more powerful when students choose the content they deconstruct. Toward that end, this study examined how college students access, filter and evaluate news about a topic of interest on a computer. Mindful of constructivist pedagogy, the concept that lessons are best constructed from the learner's existing knowledge, this study also sought to measure how aware participants are of their choices that shape what news they consume.

An important purpose of teaching news literacy is to foster habits that promote the consumption of credible and diverse news. Potter's (2004a) cognitive theory of media literacy argues for a "more conscious processing of information" and that changes in behavior build from cognitions, because,

people are much more aware during the information-processing tasks and are, therefore, more able to make better decisions about seeking out information, working with that information, and constructing meaning from it that will be useful to serve their own goals (Potter, 2004a, p. 69).

Potter's theory was tested by Ashley et al. (2013), who found that it provides a useful framework for defining and assessing news literacy. People who are more conscious of

their presence, attitudes, and beliefs, and self-focused on the difference between a preferred standard and current behavior, may have more motivation to reduce that difference (Gibbons, 1990). The self-aware person can be induced to conform to internalized standards of behavior (Goukens et al., 2010). Scheibe and Rogow (2011) also advocated news literacy lessons that ask students to be aware of their assumptions.

The following premises underlie the analysis of this study's results:

(1) Use of a strategy or criteria in the process of accessing and evaluating online news can be viewed as a "positive" or "negative" finding with respect to news literacy depending on whether it promotes or potentially lessens the likelihood of the user consuming credible and diverse news. In the case of the former, news literacy educators should seek to identify what students must learn to be induced to increase its use and in the latter what they must know to be induced to decrease it.

(2) The strategies and criteria about which students have the most conscious level of awareness are differentiated from those about which they appear likely to be either less consciously aware or unaware. This assists in distinguishing between automatic actions that typically occur without awareness (defined as skills), and strategies that are under deliberate control (Afflerbach, Pearson & Paris, 2008). This is done as follows:

(a) Unprompted mention of a strategy or criteria during the think-aloud narrative is deemed to be the most conscious or internalized level of awareness.

(b) Citing the use of a strategy or criteria during the interview rather than the think-aloud is considered a less conscious level of awareness because it was prompted by the researcher's general question about choices made

in reference to a computer screen shot of a step in the lab search. This suggests that the action may have been automatic instead of part of a deliberate strategy in which the participant was thinking critically.

(c) Using a strategy or factor without mentioning doing so in either the think-aloud or interview indicates a lack of awareness of it. No basis exists to presume the action was part of a deliberate strategy.

(3) A goal of news literacy education and assessment should be to seek an outcome in which students (a) have the *most conscious or internalized level of awareness* of the strategies and criteria that they use in the process of accessing and evaluating online news and (b) acquire an understanding of how their choices affect the credibility and diversity of what they consume. Accomplishing this goal should enhance the likelihood that students will engage in behavior that promotes the consumption of credible and diverse news.

The explosion of news available online likely contributes to the extent to which news search behavior appears to be habitual or automatic, rather than a conscious strategy. In Potter's (2004a) cognitive theory of media literacy, as a defense mechanism against information overload, people are mostly in an unconscious state where their attention is governed by automatic routines that greatly narrow the possible media messages encountered. Potter (2004a) referred to the use of automatic routines without much active thought as the default model of processing. Reliance on automatic processing to filter information deemphasizes critical thinking and, as is shown below, often results in others making decisions about the news accessed. When behavior likely to contribute to the consumption of news that lacks credibility or diversity is automatic,

news literacy education should strive to make the individual more consciously aware of its use and effects and of how the behavior might be changed.

### **Implications of Study Results for News Literacy Education**

*Students need mastery of concepts and critical thinking strategies related to the most current ways in which they access news through digital technology, including computers.*

To enhance this study's relevance and ecological validity, survey questions and lab exercises focused largely on news search habits on a computer based on the assumption that this was a primary way for college students to access news. This was borne out by the results obtained. Participants surveyed were in the habit of consuming news through digital platforms, and nearly everyone had access to a computer and a smartphone. News consumption on a mobile device may be on the rise, but this study's results and recent Pew data confirm that it remains more commonly done on computers. Participants slightly prefer video over print news, but tend to view video on the web more often than on television. They spend more time consuming news via word of mouth than on any print platform or through a television or radio. College students value sharing information via their social networks, either digitally or through face-to-face interactions.

Lab session participants noted that their news consumption routines and goals almost always differed on a computer and a smartphone. While smartphones reportedly work well for quick, goal-oriented news searches, usability limitations (mostly related to small screen size) dissuaded them from conducting longer browsing sessions, reading in-depth news, clicking through links, and looking at photos and videos. Platforms and the manner in which they are used to access news will continue to change. For news literacy curricula to be relevant, educators must be cognizant of these changes and continually adjust curricula, classroom exercises and assessments accordingly.

*News literacy should be taught before or during college, by which time students have developed interests in and are forming habits with respect to news consumption.*

Survey results show that college students spend a considerable amount of time consuming news. They are more inclined toward incidental rather than purposeful news consumption. This finding is consistent with national data of young news consumers and reflects the reality that news is often accessed after going on sites such as Facebook, Twitter, Google and Yahoo for other reasons. Lab session participants commonly mentioned that e-mail, online chats, fantasy sports and stock quotes typically draw them to sites and that finding news is a side benefit but not the primary purpose of their visit. The time some participants reported spending consuming news may be affected by their propensity to be doing other things while searching for it. College students may also be more inclined as a group to spend time online or consume news than the larger sample of people of similar age.

*News literacy lessons should continue to emphasize the civic importance of consuming credible and diverse news, and include topics of known interest to students, including international news.*

Users who are not motivated to find high-quality, credible information are more likely to settle on a source based upon surface-level qualities such as site design, while highly-motivated users will likely take a more rigorous approach to credibility assessment (Metzger, 2007). Emphasizing the importance of credible news as a civic virtue may help motivate students who may not be close followers of current news but are receptive to news about a variety of topics. The diversity of topics in which students surveyed identified an interest and in those selected in lab sessions gives credence to Madianou's (2009) argument that news consumers are interested in matters of civic importance and entertainment. Additionally, nearly two-thirds of survey respondents

agreed or strongly agreed that they like coming across news about topics and issues they have not thought much about before. However, educators should not presume to know the news interests of students in any particular class. To enhance motivation, educators should survey students' news topic interests to align at least some lessons with them.

Survey participants' notable level of interest in international news (*BBC* was among the sites at which they most often begin a news search) and the wide access to digital news media worldwide allows for news on this topic to be obtained from an ever-increasing number of sources. Students should learn about press freedoms and practices worldwide, attributes of commonly accessed foreign news sources and how to use this information to evaluate the credibility of international news published by both foreign and domestic news outlets.

Lab participants in this study were instructed to find news they deemed credible on one of the topics in which they indicated the most interest on the survey to enhance the ecological validity of their news searches. But they rarely began searching with the intent to find the specific news item they selected – or any specific story. Rather, they overwhelmingly conducted open-ended searches with awareness of a goal (to find credible, topical news) but no particular question, defined in this study as information scanning. The prevalence of the initial strategy to search without specific news in mind may indicate that lab participants as a whole were not following many particular news stories as part of their typical routine – even in high areas of interest.

*Students need to understand the potential drawbacks to living in a news silo, and the importance of thinking critically when using technology and their social networks to identify news.*

Participants surveyed favored information push over information pull, preferring to rely on technology to send them news than to actively seek it out. This is consistent with national data showing young people are the most likely age group to have news forwarded to them. Participants more often stumbled upon news online than sought out specific news of interest.

Students need to understand how social influence, personalization and customization potentially lead to consuming a narrowing selection of news sources and topics with less diverse perspectives – resulting in a hive mindset sometimes called the silo effect. Students surveyed overwhelmingly liked to receive news from their friends on sites such as Facebook and Twitter, and share news stories with others. Lab participants were often unaware that the sites at which they begin their news search tailor news to them. Students need to understand how sites track user history, previous clicks, demographics and location to identify news of likely appeal to a user’s specific tastes. Yet few participants at any time during their lab sessions indicated a concern about whether the manner in which they accessed news was contributing to a narrowing of information or perspectives.

Students can take some degree of active control over the information they receive by selecting news filters on Google, customizing their experience on news websites, following reliable sources on Twitter and Facebook, using push notification services and selecting RSS feeds. The takeaway message for students should not be “do not use technology or your social networks as news filtering mechanisms.” Rather, the emphasis should be on thinking critically when using these services and platforms in order to avoid becoming a slave to technology or overly reliant on interpersonal networks.

*Students need to know the attributes of the online portals through which they access news and the source of the news, both of which potentially affect the credibility and diversity of news consumed.*

Two-thirds of survey participants most often begin a computer news search on a portal that in some manner selects and filters the news and news sources displayed. Among them, search engines were used most often, followed by social media sites, news aggregators and social news sites. Most participants also widely used portals at various points during a news search. These sites often employ non-transparent factors or track user behavior to personalize news and make determinations about what sources to include and how to rank them. These determinations are sometimes determined by technology, human editors or a combination of both. Students need to understand the ways in which portals and news sites select and organize information, including algorithmic elements used and roles played by human editors in the most commonly-visited sites that potentially affect news credibility and diversity.

**Search engines.** Survey results showed that search engines are used widely to begin a search and by most respondents at some point during it. Hargittai et al. (2010) also found that college students frequently use a search engine as the first step in the information-seeking process, and data from Pew shows the prominent use of keyword searches when looking for news online. Search engines' design to return specific results to users' search terms likely explains why 9 of the 12 lab searches in which participants sought a specific news story began at either Google Search or Yahoo.

More participants surveyed typically begin a news search at Google Search than anywhere else. Its popularity is likely aided by being the default landing page and search engine of Chrome, the browser typically used by the overwhelming majority of lab



session participants. Participants often demonstrated automaticity or little use of judgment in their habitual use of Google or news outlets preinstalled on their computer or preprogrammed into browser news tabs.

Participants surveyed more commonly use search engines and news aggregators (such as Google News) at some point during the search process than start a search by going directly to a news outlet. Thus, even when starting at a news outlet, they often spend at least some time while on a computer accessing news through a portal that presents options of news sources from which to choose. News displayed by search engines, the most-often-used portal, may be affected by actions of the portal's owner (such as user and trend information) and by the content distributor (such as search engine optimization and paid placement). Many portal sites such as Google employ algorithms to determine news items to display and initially display little, if any, information other than headlines. Yet only a small number of lab participants correctly defined search engine optimization, which news outlets often employ to write headlines and use keywords (in text and hidden) that lead to display or high ranking on sites that use algorithms.

**Social media and social news.** Fewer than one in five survey participants most often begin a news search on social media and fewer than one in 10 on a social news site, but Facebook, Twitter and Reddit are among the five sites at which students most commonly start a news search. Further, social media is the only type of portal a majority of students frequently use at some point during the process of accessing news. Social media sites may be visited relatively less often to begin a search because they can be an inefficient way to find news about a specific topic. However, young people so heavily use

social media – as this study and Pew’s national survey found – that they are likely to visit such a site while using a computer and serendipitously find news.

Participants who began lab news searches on social media were nearly all information scanners. This result is consistent with Pew’s (2013) finding that Facebook users very rarely look to find news there but often read news they stumble upon while on the site. Lab participants who used Reddit were exclusively information scanners, and in news search sessions they patiently browsed (often sequentially) through the assembled articles, videos and slideshows. Lab searches demonstrated the appeal of social media and social news sites with respect to coming across unexpected links shared by others.

Lab participants were aware that popularity of a news item may affect its ranking or placement, but need to better understand how popularity is measured on sites such as Facebook, Twitter and Reddit, and what factors other than popularity influence what and how news items are displayed.

**News aggregators.** Fewer than one in 10 survey participants most often start a search at a news aggregator and one-third frequently use one during a search. The increasing popularity of social sharing of news likely contributes to news aggregators’ relatively lower use. News aggregators also cater to users looking to come across news, while a larger percentage (as this study found) come across it while doing other things. Still, because most students sometimes use a news aggregator during a search, they need to better understand how they work.

Lab results indicated that students need to increase their awareness of the ways in which their own online habits and algorithms used by news aggregators determine whether and how to display news and news outlets, and the role that human editors play

in this process. In many respects, this is similar to what may occur on search engines as set forth above.

*Students need to better understand how the strategies and evaluation criteria they use or could employ while accessing news online potentially affect the credibility and diversity of news consumed.*

#### Strategies and evaluation criteria used during the process of filtering online news

Whether an online search is conducted with or without specific news in mind, online news consumers are likely to face the task of narrowing down the news items to consider. Ethnographic research by Graber (1984) found that news consumers pared down the overwhelming stream of news to a manageable amount by ignoring the vast majority of content in favor of what they viewed as relevant. With the significant increase in the stream of news now available online, the thoughtful use of filtering strategies to manage the content is even more important.

The most-often-used strategy to narrow down news choices was going to a top-ranked or listed news item. Using this as a filtering mechanism is not inherently problematic. A news item's ranking or placement on a page is commonly identified in journalism curricula and widely perceived as a central indicator of newsworthiness. But this is largely a function of the traditional role of editorial judgment in assessing an item's news value. Reliance on top-ranked or listed news items by habit or the assumption that prominent placement reflects newsworthiness suggests a lack of understanding of how information is selected, distributed for publication and ranked in the digital age. With portals' increasing use of algorithms and customization technology, a high ranking or prominent placement does not ensure that a news item is credible or newsworthy according to traditional news values. Instead, this often reflects an item's

popularity with an undefined group of people, likely appeal based upon users' search history, geolocation or demographic profile, its status as trending or most shared, liked or upvoted, its being a promoted (paid) post or content from a partner news organization, or its use of search engine optimization keywords to attract web traffic. Because there is no independent metric for relevance, engineers may determine what the optimal results are for a query and tweak their algorithm to attain that result (Gillespie, 2013).

Nearly one-third of lab participants never went beyond a top-ranked or listed story when considering news to select, suggestive of a state of automaticity rather than the use of critical thinking. As further evidence of automaticity, in nearly half of all searches in which participants used an item's top-ranking/listing as a filtering mechanism, its use was never cited.

Participants' think-aloud comments revealed a high level of trust in sites that rely on algorithms to select the most newsworthy items to put first. Studies of college students' general information-seeking habits have found them to be very trusting of Google's ability to rank results by their true relevance to the query (Hargittai et al., 2010), and to overwhelmingly select top-ranked entries out of convenience, even if the abstracts do not seem relevant to the search task (Pan et al., 2007).

Lab participants were consciously aware of the source of news they considered. Nearly four in five used the filtering mechanism of considering the news outlet (including prominence or perceived reputation) when presented with options by an aggregator and everyone who used it made unprompted mention of doing so during the think-aloud protocol. However, as discussed below, for this behavior to translate into the

consumption of reliable and diverse news, students must be consciously aware of how attributes of the news sources considered affect the news consumed.

Nearly two-thirds of lab participants relied on the crowd's recommendation, a friend's recommendation or social currency of the topic in a peer group when filtering news. Participants more commonly trusted the crowd by considering the news items favored by Reddit users, with whom they are typically connected by common interests on subReddits, than by checking trending topics, or most-shared/viewed items on a news site. Several who began news searches on Reddit said they enjoy seeing who in their community shares and comments on highly-ranked news items. Sites giving prominence to trending topics or most-read and most-viewed stories show what the crowd favors in aggregate without individual identification. Reddit's relative popularity may reflect the strength of social influence in finding and assessing news.

Social influence is not a new phenomenon, but social media and social news platforms have substantially increased the ease with which users can tap into their social networks to access, filter and evaluate news. Social networks have the ability to identify news that appeals to people sharing similar interests and tastes. They can promote stories that may have otherwise been ignored or less prominently displayed by news outlets. Relying upon well-informed friends or trusted members of the crowd to share news can be a smart strategy for news consumers. However, lab participant comments illustrated a willingness to let others shape much of the news they consume and a tendency to uncritically trust the crowd's ability to promote the most relevant or reliable content. The extent that this is a problematic way to filter news depends on the crowd's evaluative abilities and dispositions. Also, social media and news sites may rely on algorithms that

weigh user voting. As mentioned above, for example, Reddit's algorithm allows a few ardent users to wield an outsized influence on the news seen by others and creates an inherent disadvantage for controversial stories.

Participants who used the filtering mechanisms of social currency, the crowd's recommendations and friend's recommendations, all relating to social influence, were largely aware of their actions. However, a significant percentage required prompting to mention this, suggesting they need become more consciously aware of the potential for their use to result in the consumption of less reliable or diverse news.

#### Strategies and criteria for evaluating news sources or outlets

Many lessons about evaluating news sources that are commonly found in existing news literacy curricula are independent of format (such as the use of editors, fairness/bias, breadth of viewpoints, etc.). These remain relevant to online news sources. Others that are unique to online news sources warrant inclusion or further emphasis. More participants surveyed (about one-third) frequently go directly to a news outlet to begin a news search than to any other type of portal into which the specific sites identified on the survey are grouped. This result is similar to national Pew data for accessing news on a computer. Regardless of where a search begins, more than three-quarters of participants typically access a news outlet at some point during the process.

Survey participants who began their search at a news outlet reported gravitating toward web sites of legacy broadcast and print news organizations that predated the internet, including *CNN*, *BBC*, *ESPN*, *The Washington Post*, *The New York Times* and *The Wall Street Journal*. Lab participants most frequently selected news items from the websites of *CNN* and *The New York Times*. The vast majority of lab participants selected

print news items rather than video segments, possibly because the former are more easily scanned during a time-limited exercise. Most print news items selected came from legacy television outlets such as *ESPN* and *CNN*, another indication of these outlets' brand recognition among college students. That some lab participants reported going to news sources because their parents used them or they were preprogrammed into web browsers suggests a state of automaticity rather than the use of critical thinking.

Once participants accessed a news outlet online, to a significant extent they did not use the criteria for evaluating news outlets tracked in this study. The most commonly-used criterion for assessing an outlet's credibility was its perceived prominence (name recognition) or reputation. As noted above, the vast majority of participants relied on this to filter news options presented on a portal, and as discussed below, the perceived trustworthiness of the outlet producing the news was the most common way of evaluating the credibility of the item selected. Relying on prominence or perceived reputation is not by itself a concern, but it is not alone a sufficient way to filter news. It reflects qualities or characteristics as judged by others, making the merits of the judgment dependent on the criteria applied by the group rendering it. An individual's firsthand experience with a news outlet over time can compensate for limitations inherent in a particular group's judgment. But the quality of the individual's judgment depends on the application of appropriate criteria affecting the value of the news published. A concern arises when reputation and prominence are used without further consideration of factors that potentially affect the reliability or diversity of news consumed—when judgment is largely or entirely outsourced—or when the consumer uses poorly conceived criteria.

Many lab participants relied heavily on brand name to evaluate a news outlet, which Tseng and Fogg (1999) described as reputed credibility. But students were often unable to give specific reasons for believing content on an outlet warranted a presumption of credibility. This is more suggestive of automaticity than critical thinking. Some participants based a credibility judgment on a surface-level characteristic such as the presence of the word “Times” in the outlet’s name, as if some externally-imposed standard was required to earn the right to use it. Even news from sources deserving of prominence and a good reputation suffer lapses and should be viewed with some scrutiny instead of automaticity. Legacy print and broadcast news organizations may have a tradition of attributes that promote credible and diverse news, but lapses in standards occur. Further, the demands to produce 24-hour continually-refreshed news content online and the use of digital technology to distribute news content increases the potential for news from these outlets as well as online-only sites to be compromised with respect to these traditional qualities.

A significant portion of participants did not use or report generally using perceived fairness/balance/lack of bias or accuracy to evaluate a news outlet – criteria that represent higher-order thinking and are commonly covered in existing news literacy curricula. Because participants were not asked to explain how they judge inaccuracy and bias, no findings can be presented about the merits of the basis for the evaluations made. However, the extent to which these criteria were not used alone suggests that students should be taught the importance of doing so with respect to news published online.

Almost no one evaluated a news outlet on its alignment with their beliefs, an indication that participants did not explicitly seek a confirmation bias with news they



access. Even so, students need be aware of the possibility of such a bias being introduced when users share news with likeminded friends on social media or join a community of Reddit users with shared interests.

Nearly all participants were aware of whether sites rely mostly on their own content or that of others, suggesting that bolstering coverage of this topic in news literacy curricula may be unnecessary. Participants rarely knew who owns the news source or outlet they used to start a news search or possible motivations owners would have to influence content, suggesting the need for increased coverage in curricula.

To a significant extent participants did not contemporaneously explain how they evaluated news outlets, suggesting less overall conscious awareness of such strategies or criteria used than for those relating to initial filtering of news or to evaluating news items.

#### Strategies and criteria for evaluating news items

The majority of lab participants did not closely read or watch the news items they selected, despite explicit directions to evaluate credibility. This is a striking illustration of what Tseng and Fogg (1999) term surface credibility evaluation, which is based on cursory inspection of superficial characteristics. That students are used to coming across news while doing other things, a behavior that seems unlikely to change given current technology use trends, may increase the appeal of shortcuts to assessing news to make searches more manageable. Still, the explosion of news and news sources available online makes it increasingly important that evaluation of items accessed go beyond surface-level characteristics.

Overall, the criteria tracked for evaluating the credibility of a news item were used or cited as generally used by few lab participants. This includes evaluating the

authoritativeness of sources cited or of the content producer, the factuality and depth of reporting, and evenhandedness/balance, checking multiple sources for comparison, and clicking through links to confirm the relevance and value of sources cited, all of which represent higher-order critical thinking. For the most part, participants demonstrated little of what McManus (2012), Kovach and Rosenstiel (2010) and Semail (2005) described as “skeptical knowing” – asking critical questions about how sources and evidence they present are vetted.

While rank and social influence were instrumental in the way participants filtered news, very few evaluated the credibility of a news item based upon its rank or placement on a site or the fact that it was a social recommendation. This suggests that while students need to better understand how using these criteria can affect the news they access and potentially reduce the likelihood they will be exposed to credible or reliable news, once they have found a news item, they largely evaluate it without undue reliance on these factors.

While participants made relatively little use of the strategies/factors for evaluating the news items accessed that involve higher-order critical thinking, those who used them were largely consciously aware of doing so. This suggests that having a conscious level of awareness correlates with the use of critical thinking. About six out of seven participants who checked multiple sources for comparison during their lab search – a strategy that takes considerable effort – contemporaneously identified doing so. Clicking through links in a news item was contemporaneously cited by nearly five of six participants who used it during their lab search.

Except for social recommendation, a significant number of participants failed to show conscious awareness of each of the tracked strategies/factors relating to evaluating a news item used during the lab search. Trustworthiness of the news outlet was used as a criterion by more than four of five participants, but most did not contemporaneously identify doing so. A particularly high percentage of participants mentioned depth of reporting, the existence of the content producer name and evenhandedness/balance only during the interview, when prompted to explain their evaluation criteria. One-third of participants who clicked through links never cited doing so, indicative of entirely automatic behavior. These results suggest that many students are likely not thinking critically about the criteria for evaluating news items.

#### Overall level of conscious awareness of strategies and evaluation criteria

A significant percentage of lab participants failed to contemporaneously acknowledge all but a few of the 31 strategies and criteria they used to filter news accessed through portals, and to evaluate news sources and news items. Use of 19 of these strategies and criteria were mentioned as or more often during interviews than during think-aloud narratives. These results suggest that in addition to giving students a better understanding of how the way they access news online affects the credibility and diversity of what they consume, news literacy educators should help students become more conscious of the strategies and evaluation criteria they use.

#### **Implications of Study Results for the News Industry**

This study found that to a significant extent college students lack a high level of awareness of how the ways in which they access news online affect the credibility and diversity of what they consume, and of the important indicators of these qualities once

they focus on a particular news item. In order to increase the likelihood of future demand for credible and diverse content, news organizations should (and in some cases have already begun to) support the development and widespread use of news literacy curricula that teaches the concepts and critical thinking strategies a discerning news consumer must have in the digital age.

Several findings about college students' news consumption habits, as well as search strategies and evaluation criteria used, have implications for news organizations seeking to attract younger readers. College students spend a significant amount of time accessing news (usually happening across it), but most often do not begin a news search directly at a news outlet and instead rely heavily on their social networks to promote interesting content. Therefore, news organizations should widely distribute their news content rather than assume young readers will come to them. They should make efforts to ensure their content finds its way to the most-used social media and news sites and continue to develop "social readers" – plug-ins or mobile applications that enable users to see what people in their networks are reading from a news outlet. This study suggests that allowing users to vote up or down on news items posted, an increasingly popular news site feature, is a productive strategy for promoting reader engagement, as far more students paid attention to user voting than lists of most-emailed or most-read news items.

Search engines continue to be influential in the way that users access news. Because students often begin a news search at Google Search, and access online news that is highly ranked or appears prominent among options presented, news outlets likely benefit from practices (such as search engine optimization) that promote their content being displayed in this manner. They would also benefit from securing a presence as a

pre-programmed news source on a computer, as many students said they typically start their news search at an outlet simply because it is the default option. News organizations can make it easy for users to access content by investing in “push” technology – daily e-mails, breaking news updates and RSS feeds. A majority of students like relying on technology to send them news and are in the habit of getting news while doing other things.

College students spend substantially more time consuming news online than through print or broadcast platforms, slightly prefer video news to print news, and are much more likely to watch web videos and read full articles on a computer than on a cell phone. Computer news consumers appear more likely than mobile users to watch video news and read content for prolonged periods of time – signs of sustained engagement that appeal to advertisers. These findings suggest that news organizations – even those that focus primarily on print news – should invest in producing web videos to engage young news consumers.

College students appear sufficiently interested in topics such as international news, health and science to justify the devotion of resources to covering and publishing content on these topics. Students indicated an interest in being exposed to a variety of viewpoints and starting news searches at sites that gather news for them, which suggests an opening for aggregators that select stories from ideologically diverse news outlets.

Finally, this study’s findings that students pay close attention to the reputation or “brand name” of news outlets and associate online news content from legacy news sources – particularly those used by their parents – with credibility suggest that these news organizations should take every opportunity to promote their history of providing

trustworthy news. There may be a benefit to maintaining legacy outlet identity rather than publishing online content under a different name – such as CNN with its sports arm, Bleacher Report.

### **Theoretical Implications of Study Results**

This study confirmed a central tenet of Potter’s cognitive theory of media literacy: Media consumers are often in a state of automaticity when exposed to the constant flow of digital content. Findings provide further evidence of the importance of critical thinking, and active awareness of the strategies and criteria used during each stage of the online news search process.

This study also provided strong evidence that interpersonal networks are central to the process by which students access, filter and evaluate digital news. The two-step flow theory of communication remains relevant in explaining the common use of several search strategies and evaluation criteria. In their think-aloud narratives and interview responses, many students referenced the concept of trusting opinion leaders to identify news, as illustrated by the comment:

I want to look at articles and one of my friends is interested in journalism...She wants her friends to be aware of current events or things going on in the area. She exposes me to things that I wouldn't normally look at.

In this case, the study participant’s friend is the opinion leader who enjoys influencing the news intake of less-engaged members of her social network. The study participant is willingly influenced by the opinion leader, a member of the same peer group who appears to be more generally exposed to news and is easily accessible through social media.

The central concepts of the two-step flow (information flows from the mass media first to opinion leaders and from opinion leaders to less active sections of the

population) and the primary and media socialization theory (exposure to media is mediated by the direct influence of one's personal network) help explain the study participant who commented that:

Coming from someone I know, him explaining it is better than having the news do it. He's summarizing the main points so I can understand [the news] a lot better.

Rather than directly connecting with the news, this participant and many others like him prefer to have a trusted friend filter and summarize the news.

Katz (1957) made the case that interpersonal relations are not just channels of information but also sources of social pressure and social support. Social pressure to follow news in general and specific news topics was a common theme mentioned by study participants who relied upon interpersonal networks when searching for and evaluating news. The student who commented that "I'm not going to take the time to watch the news and learn about stuff but if everyone is talking about stuff I want to know about what everyone is talking about" referred to this social pressure or need for social currency within a peer group.

While the two-step flow and primary/media socialization provide relevant frames of reference to analyze this study's results, additions to these theories are necessary in order to accurately reflect the digital media landscape. First, the ease of sharing information on social media and news sites means that it has become far easier for anyone to become an influencer. Many people who regularly post news about a topic do not aim to influence opinions, nor do they consider themselves experts or frequent news consumers in that area. However, the low barriers to widely sharing content enable nearly anyone to influence the news that those in his or her network receive. Put another way, it

has become increasingly easy to play the role of mediator between the news media and one's interpersonal network. Strikingly, the vast majority of survey respondents said they like to share interesting news stories with others and like to receive news from other people. This suggests that even within the same visit to a social media site, students are used to being both influencers and the influenced. "Liking" or "upvoting" news items are new ways of influencing the information that people in one's community receives.

This study also found that members of the crowd, who often are anonymous or personally unknown to users, can influence the ways in which students filter and evaluate the credibility of news. Two comments from study participants illustrate that even so-called "weak ties" can mediate interactions with news:

The votes do factor in [to my credibility evaluation] because I'll trust that other people have validated it before me.

If these people say it was really good and interesting, it must be – I'm going with the crowd.

The notion of the personal network has expanded beyond the traditional definition of friends, family and school to include members of the online community.

Finally, this study suggests that technology plays a strong mediating or filtering role along with human influencers. The majority of survey respondents said they like to receive news from technology. Students commonly access news from sites that rely on algorithms that filter the news they access. When they are on social media sites, for instance, students may be at once relying on human influencers to post and comment on news and technology to filter the news they find. Thus, an updated explanation of the two-step flow may be that information flows from content producers to opinion leaders and through technological filters to less active sections of the population.



## **Limitations**

This study sought a diverse sample of college students to complete the online survey and take part in lab sessions. Although the researcher strategically recruited participants in introductory courses, student groups and interdisciplinary living-learning programs that attract students of different ages and academic majors, the study relied on a convenience sample. A true probability sample would have allowed the researcher to make a stronger claim about the generalizability of the findings to all college students at the University of Maryland or, more preferably, nationwide. However, this was not feasible due to lack of access to a database of all undergraduate students, and to time and resource restraints related to conducting lab sessions at other colleges.

The study's self-selected sample and the lack of authentication of survey participants are also methodological limitations. The researcher made a concerted effort not to recruit an abundance of journalism majors and students who had taken a news or media literacy course who might be unusually heavy or savvy news consumers. While only 8.6% of survey respondents and 8.1% of lab session participants were journalism majors, only 2% of undergraduates at the University of Maryland are in journalism. One in five survey respondents and one in six lab session participants had taken a news or media literacy course. Participants who were motivated enough to take the survey and participate in lab sessions may have been more engaged with news than the university population as a whole. Additionally, participants completed the online survey at a time and place of their choosing, making it impossible to verify their identities.

Survey results about the sites typically visited during a news search likely reflect the geographic location of the university and its undergraduate student population, 76%

of whom are from Maryland<sup>xx</sup> and the vast majority from the Northeast corridor. This may have contributed to the extent of the popularity of outlets such as *The Washington Post* and *The New York Times*.

This study focused exclusively on how participants search for and select news on a computer. This was a strategic decision made in order to avoid the confounding variable of the media platform. Most participants mentioned that their news search habits or strategies employed to filter news differ depending on whether they are on a computer or a mobile device. The researcher eliminated survey respondents who indicated that they never use a computer to access news on the sites they most often visit from the pool of possible lab session participants. However, some participants very rarely used a computer to access sites visited during their lab session and thus were not following their typically news search routine. While study results found that searching for news on a computer remains more common than using a cell phone or tablet, news consumption on a mobile device is on the rise. This is only captured in this study in an interview question asking participants how their lab searches would have differed had they searched on a mobile device.

Participants were required to start their news searches where they typically begin, as indicated in their survey responses, to reduce the possibility they would begin their search at a site they thought the researcher would want them to visit. Still, the presence of the researcher may have led to normative responses from participants or actions they would not typically take while searching for news on their own. While the researcher remained silent during the news searches to avoid priming participants or interrupting their typical routine, the instruction to talk aloud during the search may have caused them

to modify their behavior. Based on previous research, the researcher concluded that the drawbacks to having participants discuss their thought processes only after their news searches outweighed any such drawbacks. For some participants, the instruction to select a credible news item also may have changed their typical routine given research showing that students often access news that is convenient and rely on sources they do not consider credible. Finally, some participants may have used a search strategy or evaluation criterion without verbalizing it during the think-aloud or interview, or without demonstrating it clearly enough for the researcher to notice.

### **Directions for Future Research**

A logical follow-up to this study would investigate participants' widespread claim that they access, filter and evaluate news differently on a computer than on a mobile device. This study could be replicated using the think-aloud method with news searches about topics of interest on both a computer and a smartphone. This would provide data about how students utilize mobile technology to consume news and how this compares to the same task on a computer. Alternatively, this study could be replicated with participants conducting news searches on two different news sites on the same mobile device.

Given participants' significant use of mobile technology and social media to access news, a future study could focus on how students access, filter and evaluate news on various popular social media sites that they routinely use, such as Twitter, Facebook and Reddit, to obtain a larger sample size for each than this study obtained. This could produce data about the use of social media to access news and awareness of the silo effect or hive mentality.

This study attempted to control for motivation and familiarity in the lab setting by instructing participants to seek topics of stated interest, and to start their search where they typically begin. Future studies could make interest and familiarity independent variables by instructing subjects to conduct searches on topics in which they are both interested and disinterested, and on sites in which they are both familiar and unfamiliar. This research design would provide data about whether participants access, filter and evaluate online news differently depending on level of interest and familiarity with a site.

The results presented in this paper mostly show how participants collectively access, filter and evaluate news. Its purpose was to inform news literacy curricula rather than to analyze how individual participants' strategies and criteria varied depending on where a news search began. However, this study produced such data and many participants displayed situated cognition by varying their strategies and criteria depending on the sites they visited. News literacy educators should not assume that students employ a single set of strategies and criteria for all news searches, but rather they may adapt their behavior depending on the site and the situation. Future research could tap into data collected in this study to investigate situated cognition among online news consumers.

Data from this study could also be used to determine whether certain characteristics of lab participants tend to predict whether they employ higher-order-thinking strategies and evaluation criteria. Follow-up studies could create a classification system – low, medium and high news literacy levels – based upon news search habits, use of search strategies and evaluation criteria, and awareness of the choices they make when accessing news online that shape what they consume. Forming these classifications would also enable researchers and news literacy instructors to further refine teaching

strategies and specific lessons that could be used to help students of varying news literacy levels become more discerning news consumers. Post-intervention experiments could then test the effectiveness of these strategies and lessons on improving students' critical thinking ability as it relates to searching for and selecting credible and diverse news.

Participants in this study were instructed to find news items they deemed credible, but those items selected were not reviewed and rated for attributes of credibility. Future studies could add this step to the method employed here to identify correlations between the other indicators and the extent to which news selected had potential issues regarding credibility.

### **Conclusion and Recommendations**

This study found that college students report spending a significant amount of time consuming video and written news, largely through digital platforms and mostly on a computer. They favor information push over information pull, preferring to rely on technology and others to send them news. They are mostly information scanners and more often stumble upon news online than seek out specific news of interest. Students have a strong social interest in news, like to share stories with others, and are often trusting of others and technology to filter the news they consume. They often did not pay close attention to the process by which they accessed and filtered news online, doing so in a state of automaticity instead of thinking critically. When asked to explain the thought processes underlying their news searches, a significant percentage of students lacked a conscious awareness or understanding of the strategies and evaluation criteria that potentially affect the credibility and diversity of news consumed. As a result, students'

online news habits often placed them at risk for consuming unreliable news and for adopting a hive mindset or being in a news silo.

Given the exploratory nature of this study, it is premature to suggest curricular reform based upon the results presented above. More empirical evidence is needed in order to advise news literacy educators on the most effective ways to teach specific concepts or make students more actively aware of their thought processes during news searches. However, this study's results support the following general recommendations for news literacy curricula:

1. Educators must continually adjust curricula, classroom exercises and assessments to address the concepts and critical thinking strategies relevant to the most current ways in which students typically access news through digital technology. A week-one homework assignment could ask students to complete a survey of their news consumption habits and interests, track their news intake for 24 hours and complete a self-assessment of the ways in which they access, filter and evaluate news. This would provide educators with formative data about their students. Covering news topics of interest to students, choosing examples that involve news sites they frequently use and discussing their tendencies when searching for news increases the likelihood of student engagement. The self-assessment also makes students more aware of their news diets and commonly used search strategies and evaluation criteria.

2. Curricula should continue to emphasize the civic importance of consuming credible and diverse news. After students have looked inward for their first homework assignment, they should be asked to look outward through lessons that cover the importance of news to a democracy, press freedoms and practices worldwide, attributes

of commonly-accessed foreign media, and how these affect the credibility and diversity of foreign and domestic media coverage of international news, which is readily available online and appears to be of high interest to college students.

3. Curricula should encompass concepts and critical thinking strategies that students need in order to enhance both the credibility *and* diversity of news consumed online, with a focus on how they come across and filter it in addition to how they evaluate it once accessed. Before students learn about how to assess the credibility of specific news outlets or news items (commonly included in news literacy curricula), they should think critically about how the initial choices they make when accessing news -- including whether they go directly to a news outlet or to a news portal, whether they have customized their news experience, etc. -- can shape what they consume.

4. Along those lines, curricula should cover how the use of portals -- search engines, social media sites, news aggregators and social news sites -- and the news outlets that students typically access online shape the news consumed. This includes technological features, actions by humans (owners, editors and other users) and the students' own online habits that determine what and how news is displayed, such as:

- Relevant elements of algorithms used by portals and news outlets that students typically access which affect a news source or news item's appearance, ranking or placement
- Actions taken by the news content distributor (e.g., use of search engine optimization, paid placement)
- Others' actions (e.g., news story or item's trending, how popularity is measured on social media and social news sites)

- Portals and news outlets' use of students' behavior to track online activity and history to personalize news displayed (e.g., previous clicks, demographics, location, and social information such as contacts/networks)
- The effect of students' online behavior on news accessed (e.g., reliance on recommendations of friends or the crowd, or on social currency of the news topic, and seeking news source that aligns with beliefs)
- Whether a portal or news source uses editors, and if so, the role they play in determining the content and prominence of news
- Who owns or operates the news outlets that publish the news that students typically consume and possible motivations for influencing content (e.g., conflict of interest, personal bias, promoted posts, and restricted press freedoms)
- Importance of critically evaluating the attributes of a news item rather than relying exclusively on the news outlet's perceived prominence or reputation (e.g., lapses in standards, demands of 24-hour, quick-to-publish online environment)

5. Once students are aware of how their choices when accessing and filtering news can affect the credibility and diversity of the news they consume (lessons that could last several weeks), they should be taught how to evaluate the credibility/veracity of news outlets and news items. This study provided an extensive list of strategies and criteria that indicate higher-order thinking but were not commonly used by students. These include:

- Identification and authoritativeness of content producer identified
- Evidence of factuality, attribution/identification of sources and their authoritativeness
- Depth of reporting, content's evenhandedness/balance



- Headline that is reflective of item content and newsworthiness

To the extent news literacy curricula already incorporate some of this content, it should be reviewed to ensure that it reflects how news is currently consumed online, the explosion of online news sources and content, and the low barriers to publication.

6. Finally, educators should adopt learning outcomes and assessments that measure whether students are using what they have learned in class to think critically as they access, filter and evaluate online news using their typical routine, and to demonstrate awareness of the strategies and criteria used in the process. This means that instead of creating tests in which students analyze news content selected for them, educators should measure students' ability to (a) find and evaluate credible and diverse news of interest, (b) cite the range of strategies and criteria they relied upon, and (c) identify the digital media concepts (search engine optimization, news ownership, news personalization, etc.) that may have been relevant in their news search.

## Appendices

### Appendix A: Survey Questions for Study Participants

1. Do you own or have regular access to the following? (Check all that apply)  
Laptop or Desktop Computer, Tablet Computer (iPad, Surface, etc.), E-reader (Nook, Kindle, etc.), Smartphone (cell phone with Internet access), Television, Digital Music Player (iPod, etc.)
2. What type of computer do you typically use? (Mac or PC)
3. On a typical work or school day, how often do you consume news on a computer using the following mediums? (Print, Video, Audio)
4. On a typical work or school day, about how many minutes do you spend accessing news through each of the following? (Printed newspaper/magazine, Any type of news (text, video, etc.) on a computer, Any type of news (text, video, etc.) on a tablet, Any type of news (text, video, etc.) on a cell phone, E-reader (Nook, Kindle, etc.), Television, Radio, Word of Mouth (in person, phone, online chats, etc.), Other.)
5. Please indicate your level of interest in news about the following topics (Arts, Business/Economy, Crime, Education, Entertainment, Health, International News, Lifestyle, Politics, Religion, Science, Sports, Technology, Other).
6. How often do you turn to each of the following for news of interest? (Directly to news source or app (Washington Post, CNN.com, BuzzFeed, Huffington Post, etc.), Facebook, Twitter, Pinterest, Instagram, Reddit, Digg, Tumblr, Flipboard, Zite, Google Search, Google News, Yahoo Search, Yahoo News, Bing Search, Bing News, Other).
7. Please enter the names of up to three websites and/or apps that you most often begin your news search with.
8. How often do you typically do each of the following? (Go online specifically to get news, Come across news when you are online doing other things)
9. Do you currently use a website or app that you have customized to include/display your favorite type of news?
10. Please indicate the extent to which you agree or disagree with the following statements (I like to actively search for news, I like to receive news from other people, I like to rely on technology (e-mail/text alerts/RSS feed) to send me news,

I like to share interesting news stories with others, I typically have a clear idea of what I'm looking for when I search for news, I typically browse for news without having a clear idea of what I'm looking for, I only follow news about specific topics that really interest me, I like coming across news about topics and issues I have not thought about very much before).

11. What is your gender?
12. What is your age?
13. In which college/school is your academic major?
14. How did you find out about this survey?
15. In what class did the researcher visit you to introduce this study?
16. Have you completed the Journalism 175: Media Literacy course or any other high school or college course that covers media literacy?
17. Are you interested in participating in a brief (20- to 30-minute) lab session in the next month that covers the topics discussed in this survey?
18. Are you interested in being entered into a random drawing for a \$25 gift card for completing this survey?

## **Appendix B: Interview Questions for Lab Participants**

Participant: \_\_\_\_\_

### **GENERAL QUESTIONS:**

How is this site part of your typical daily news routine?

Why do you typically start with [name of site] when searching for news on a topic of interest?

How would you rate the credibility of the information included on this site? How do you evaluate this?

### **QUESTIONS ABOUT THE NEWS SEARCH:**

What was the first thing you looked for on this page and why?

How did you decide what to scan or read on this page and what to ignore?

What specifically about the item led you to consider it?

### **QUESTIONS ABOUT THE NEWS ITEM SELECTED**

Why did you select this news item?

How did you make credibility evaluations?

Is this a news story you had been following or are familiar with?

What was your prior interest in this specific news item on a scale of 1-5, with 1 being very low and 5 being very high?

### **QUESTIONS ABOUT NEWS SITE ITSELF:**

Please tell me what you know about how news items are selected to be on this site.

Do you know how particular news items are selected to be listed more prominently on the site?

Do you know if how often an item has been clicked on by other people affects how it is displayed – its rank or prominence on the site?

Do you know if your digital media habits affect what is shown on this site or how a news item is displayed (i.e., its listed rank or prominence among choices)?

Do you know what search engine optimization (SEO) is and how it might affect the appearance of an item on this site?

Do you know the extent to which the news site typically publishes items created by its own reporters or uses content from elsewhere?

Do you know who owns or operates the site?

Do you know the owner's or operator's objective in gathering news for this site?

Are you aware of any reasons why the owner or operator of this site might influence its news content?

Are there types of news items you may be missing by conducting your search here?

## Appendix C: IRB Consent Form

**Project Title**    **Searching For and Evaluating Online News – Survey Group**

**Purpose of the Study**    *This research is being conducted by **Elia Powers** at the University of Maryland, College Park. We are inviting you to participate in this research project because you are an undergraduate at the University of Maryland. The purpose of this research project is to investigate how students search for and evaluate online news through a computer.*

**Procedures**    *The procedure involves completing an online survey at a time and place of your choosing. The survey covers your news consumption habits and interests in news. The survey should take no longer than 10 minutes to complete. At the end of this survey you will be asked whether you would like to be (a) considered for participation in a lab session in which you would earn \$20 and/or (b) be entered into a drawing to win a \$25 gift card for completing this survey.*

**Potential Risks and Discomforts**    *There are no known risks associated with participating in this research project.*

**Potential Benefits**    *This research is not designed to help you personally, but the results may help the investigator learn more about how students access, process and evaluate online news using a computer.*

**Confidentiality**    *Any potential loss of confidentiality will be minimized by storing online survey data through a password-protected software program, a password-protected computer and a locked cabinet in the researcher's office. Only the researcher will have access to this password and to the computer.*

**Right to Withdraw and Questions**    *If we write a report or article about this research project, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law. Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise*

qualify.

*If you are an employee or student, your employment status or academic standing at UMD will not be affected by your participation or non-participation in this study.*

*If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator:*

**Elia Powers  
Primary Investigator  
1100 Knight Hall  
University of Maryland College Park, MD 20742**

**Or [epowers1@jmail.umd.edu](mailto:epowers1@jmail.umd.edu)**

*If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:*

**Participant  
Rights**

**University of Maryland College Park  
Institutional Review Board Office  
1204 Marie Mount Hall  
College Park, Maryland, 20742  
E-mail: [irb@umd.edu](mailto:irb@umd.edu)**

Telephone: 301-405-0678 *This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.*

**Statement of  
Consent**

*Your electronic signature indicates that you are at least 18 years of age; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You will receive a copy of this signed consent form.*

*You will receive a copy of this consent form. If you agree to participate, please **type your full name** below.*

## Appendix D: Search Strategy and Evaluation Criteria Coding Sheet

### CODING SHEET FOR \_\_\_\_\_

NA=Narrative Action; N=Narrative; A=Action; IA=Interview Action; I=Interview

CONCEPTS, DIMENSIONS & INDICATORS				
<b>Initial Strategy Used in News Search (Mutually Exclusive)</b>				
1	Searched without specific news in mind (information scanner)			
2	Searched with specific news in mind (information seeker)			
<b>Search Strategies and Factors Used to Filter News (Check All That Apply)</b>				
<b>Reputation/Familiarity of Outlet</b>				
3	Considered news outlet when presented with choices by a portal site			
<b>Content</b>				
4	Headline drove decision of what items to consider			
5	Considered summarization/digest			
<b>Popularity/Social Recommendation</b>				
6	Top-ranked/listed stories			
7	Trending topics			
8	Crowd's recommendation			
9	Friend's recommendation			
10	Social currency in peer group			
<b>Design of Online Interface</b>				
11	Visuals (photos or graphics) drove decision of what items to consider			
<b>Use of Online Interface</b>				
12	Clicked Through to Landing Page/Specific Section of the Site			
13	Accessed and Compared Multiple Stories at a Time			
14	Surveyed Options on a Home Page Before Making a Decision			
<b>News Outlet Evaluation Criteria (Check All That Apply)</b>				
<b>Reputation</b>				
15	Familiar Journalist			
16	Perceived Outlet Reputation or Prominence			
17	Authoritative Source on Topic			
18	Friends Less Reliable Than News Organization			
19	Site Domain (.com, .edu, .gov)			
<b>Content</b>				
20	Use of Editors/Edited Content			
21	Quality of Writing			
22	Identifies and/or Links to Sources			



23	Perceived Fairness/Balance/Lack of Bias			
24	Perceived Accuracy			
25	Breadth/Exposure to Variety of Viewpoints			
26	Provides Niche News			
27	Aligns With Beliefs			
28	Posts News in Timely Manner			
	<b>Design</b>			
29	Usability/Visual Appearance			
	<b>News Item Evaluation Strategies and Criteria (Check All That Apply)</b>			
	<b>Reputation</b>			
30	Trustworthiness of News Outlet			
	<b>Content</b>			
31	Existence of Attribution			
32	Authoritativeness of Sources Cited			
33	Existence of Content Producer's Name			
34	Authoritativeness of Content Producer			
35	Content of Headline			
36	Depth of Reporting			
37	Factuality/Opinions			
38	Evenhandedness/Balance			
39	Checked Multiple Sources For Comparison			
40	Existence of Links in a News Item			
41	Clicked Through Links in News Item			
	<b>Popularity/Social Recommendation</b>			
42	Social Recommendation			
43	Prominence or Placement/Rank on Site			
	<b>Design</b>			
44	Usability/Visual Appearance			

**Appendix E: On a Typical Work or School Day, About How Many Minutes Do You Spend Accessing News Through Each of the Following?<sup>xxi</sup>**

<b>Platform</b>	<b>None</b>	<b>1-15 min.</b>	<b>16-30 min.</b>	<b>31-45 min.</b>	<b>46-59 min.</b>	<b>60 min. or more</b>
Cell	15.8%	30.9%	27.1%	11.3%	5.8%	9.2%
Computer	0.4%	27.0%	27.5%	16.7%	12.5%	15.8%
E-Reader	95.7%	2.6%	0.9%	0.4%	0.0%	0.4%
Printed Newspaper or Magazine	47.5%	40.4%	9.6%	2.1%	0.4%	0.0%
Radio	67.2%	16.2%	8.9%	4.3%	3.4%	0.0%
Tablet	74.3%	11.0%	7.2%	5.1%	1.7%	0.8%
Television	30.8%	32.1%	19.8%	11.0%	3.4%	3.0%
Word of Mouth	8.9%	40.3%	28.4%	9.3%	5.1%	8.1%

**Appendix F: Portals/Sites Identified Among Top Three at Which Students Begin a News Search, Grouped by Type.**

**DIRECTLY TO A NEWS SOURCE**

<b>Portal/Site</b>	<b>#</b>	<b>%</b>	<b>Portal/Site</b>	<b>#</b>	<b>%</b>
CNN	69	10.4%	Directly to news source	1	0.2%
Wash Post	45	6.8%	E! Online	1	0.2%
NY Times	30	4.5%	Economist	1	0.2%
ESPN	17	2.6%	ELMS	1	0.2%
BBC	15	2.3%	Examiner	1	0.2%
Huffington Post	11	1.7%	Forbes	1	0.2%
Diamondback	7	1.1%	Guardian	1	0.2%
FoxNews	6	0.9%	Haaretz.com	1	0.2%
Tumblr	5	0.8%	Hometownannapolis.com	1	0.2%
WSJ	5	0.8%	Hotair	1	0.2%
BuzzFeed	4	0.6%	Inside lacrosse	1	0.2%
NPR	4	0.6%	Media Crunch	1	0.2%
Colbertnation.com	3	0.5%	MyFoxDC	1	0.2%
Daily Beast	3	0.5%	New York post	1	0.2%
NBC News	3	0.5%	News source of topic's region	1	0.2%
The Daily Show	3	0.5%	Newsweek	1	0.2%
Al-Jazeera	2	0.3%	Newsday.com	1	0.2%
APNews	2	0.3%	NHL.com	1	0.2%
Bleacher Report	2	0.3%	Perez Hilton	1	0.2%
CNBC	2	0.3%	Politico	1	0.2%
MSNBC	2	0.3%	Real Clear Pol.	1	0.2%
People	2	0.3%	SB Nation Blogs	1	0.2%
Superscore.com	2	0.3%	Seeking Alpha	1	0.2%
Washington Times	2	0.3%	Techwire	1	0.2%
ABC News	1	0.2%	Ted.com	1	0.2%
AOL	1	0.2%	The Atlantic	1	0.2%
Astrobytes	1	0.2%	The Nation	1	0.2%
Baltimoresun.com	1	0.2%	The New Republic	1	0.2%
Barstool	1	0.2%	Time.com	1	0.2%
Breitbart	1	0.2%	TMZ	1	0.2%
Business Week	1	0.2%	USA Today	1	0.2%
Christian Sci. Monitor	1	0.2%	Virginian Pilot	1	0.2%
Cnet.com	1	0.2%	Weather channel	1	0.2%
Comcast.net	1	0.2%	Weather.com	1	0.2%
Cracked	1	0.2%	WJLA.com	1	0.2%
			<b>TOTAL:</b>	<b>292</b>	<b>43.8%</b>

**SEARCH ENGINE**

**SOCIAL MEDIA**

<b>Portal/Site</b>	<b>#</b>	<b>%</b>	<b>Portal/Site</b>	<b>#</b>	<b>%</b>
Google Search	91	13.7%	Twitter	57	8.6%

Yahoo Search	45	6.8%	Facebook	52	7.8%
Bing search	6	0.9%	Instagram	6	0.9%
YouTube	2	0.3%	Pinterest	3	0.5%
Baidu	1	0.2%	Imgur	1	0.2%
Naver	1	0.2%			
<b>TOTAL: 146 21.9%</b>			<b>TOTAL: 119 17.9%</b>		

NEWS AGGREGATOR			SOCIAL NEWS		
Portal/Site	#	%	Portal/Site	#	%
Yahoo News	19	2.9%	Reddit	40	6.0%
Google News	17	2.6%	BuzzFeed	2	0.3%
MSN	9	1.4%	slashdot.org	2	0.3%
Flipboard	7	1.1%	4Chan	1	0.2%
Drudge Report	3	0.5%	Tickld	1	0.2%
Bing News	1	0.2%			
Circa	1	0.2%			
Feedly	1	0.2%			
News app/Win8	1	0.2%			
Newser	1	0.2%			
Trove	1	0.2%			
UNWire	1	0.2%			
Wikipedia	1	0.2%			
<b>TOTAL: 63 9.5%</b>			<b>TOTAL: 46 6.9%</b>		

\* # = number of mentions among top three sites to begin search

\*\* % = percentage of all mentions

**Appendix G: Portals/Sites at Which Students Began Lab News Searches.**

<b>Portal/Site</b>	<b>Searches</b>	<b>Percentage of Searches</b>
Google	10	13.5%
CNN	7	9.5%
Facebook	7	9.5%
Twitter	7	9.5%
Yahoo News	7	9.5%
Reddit	5	6.8%
Google News	4	5.4%
BBC News	3	4.1%
New York Times	3	4.1%
Huffington Post	2	2.7%
Instagram	2	2.7%
The Daily Beast	2	2.7%
Washington Post	2	2.7%
Bleacher Report	1	1.4%
Buzzfeed	1	1.4%
ESPN	1	1.4%
MSN	1	1.4%
Newser	1	1.4%
Newsweek	1	1.4%
NPR	1	1.4%
Pinterest	1	1.4%
Politico	1	1.4%
Real Clear Politics	1	1.4%
The Diamondback	1	1.4%
Tumblr	1	1.4%
Yahoo Search	1	1.4%
<b>TOTAL:</b>	<b>74</b>	<b>100.0%</b>

## Appendix H: Strategies/factors used to filter news

Indicator	Participants*	Searches**	A	B	C	D
Top-ranked/listed stories	<b>81.1%</b>	<b>59.5%</b>	16.2%	13.5%	2.7%	27.0%
Considered news outlet when presented with options by aggregator***	<b>78.6%</b>	<b>55.6%</b>	51.1%	0.0%	4.4%	0.0%
Headline drove decision of what items to consider	<b>73.0%</b>	<b>54.1%</b>	14.9%	29.7%	8.1%	1.4%
Visuals (photos/graphics) drove decision of what items to consider	<b>73.0%</b>	<b>58.1%</b>	16.2%	20.3%	10.8%	10.8%
Went to landing page/specific section of the site	<b>70.3%</b>	<b>48.6%</b>	27.0%	4.1%	1.4%	16.2%
Surveyed options on a page before making a decision	<b>54.1%</b>	<b>36.5%</b>	13.5%	9.5%	2.7%	10.8%
Social currency in peer group	<b>40.5%</b>	<b>21.6%</b>	8.1%	6.8%	6.8%	0.0%
Accessed and compared multiple stories at a time	<b>37.8%</b>	<b>25.7%</b>	9.5%	0.0%	8.1%	8.1%
Crowd's recommendation	<b>35.1%</b>	<b>17.6%</b>	4.1%	8.1%	5.4%	0.0%
Friend's recommendation	<b>29.7%</b>	<b>16.2%</b>	8.1%	5.4%	1.4%	1.4%
Trending topics	<b>21.6%</b>	<b>12.2%</b>	2.7%	4.1%	2.7%	2.7%
Considered item summarization/digest***	<b>14.3%</b>	<b>13.3%</b>	6.7%	2.2%	0.0%	4.4%

A= Cited use of strategy/factor during narrative

B= Cited use of strategy/factor during interview

C= Cited use of strategy/factor in general though not used during search

D= Strategy/factor used during search without participant citing its use

\* Percentage of participants coded either A, B, C or D during at least one of two searches

\*\* Percentage of all searches in which participants were coded A through D

\*\*\*For participants, n=28; for searches, n=45

## Appendix I. Criteria Used/Cited to Evaluate a News Outlet

Indicator	Participants*	Searches**	A	B	C	D
Perceived reputation or prominence	75.7%	47.3%	9.5%	12.2%	25.7%	0.0%
Perceived fairness/balance/lack of bias	59.5%	37.8%	2.7%	2.7%	32.4%	0.0%
Breadth/exposure to variety of viewpoints	59.5%	40.5%	4.1%	4.1%	32.4%	0.0%
Authoritative source on topic	48.6%	25.7%	8.1%	6.8%	10.8%	0.0%
Identifies and/or links to sources	40.5%	20.3%	1.4%	4.1%	13.5%	1.4%
Perceived accuracy	40.5%	21.6%	2.7%	2.7%	16.2%	0.0%
Posts news in timely manner	35.1%	18.9%	0.0%	2.7%	16.2%	0.0%
Usability/visual Appearance	35.1%	21.6%	1.4%	4.1%	16.2%	0.0%
Familiar journalist	29.7%	14.9%	5.4%	4.1%	5.4%	0.0%
Quality of writing	27.0%	17.6%	5.4%	2.7%	9.5%	0.0%
Mentioned that friends less reliable than news organization	21.6%	10.8%	1.4%	1.4%	8.1%	0.0%
Use of editors/edited content	13.5%	6.8%	0.0%	1.4%	5.4%	0.0%
Site domain (.com, .edu, .gov)	10.8%	5.4%	1.4%	0.0%	4.1%	0.0%
Provides niche news	5.4%	2.7%	2.7%	0.0%	0.0%	0.0%
Aligns with beliefs	5.4%	2.7%	0.0%	1.4%	1.4%	0.0%

A= Cited use of strategy/factor during narrative

B= Cited use of strategy/factor during interview

C= Cited use of strategy/factor in general though not used during search

D= Strategy/factor used during search without participant citing its use

\* Percentage of participants coded either A, B, C or D during at least one of two searches

\*\* Percentage of all searches in which participants were coded A through D

## Appendix J: Results: Criteria used to evaluate news item

Indicator	Participants*	Searches**	A	B	C	D
Evaluated trustworthiness of news outlet	81.1%	55.4%	23.0%	32.4%	0.0%	0.0%
Evaluated content of headline***	50.0%	34.8%	1.5%	28.8%	4.5%	0.0%
Evaluated authoritativeness of sources cited	48.6%	32.4%	13.5%	18.9%	0.0%	0.0%
Evaluated authoritativeness of content producer	48.6%	27.0%	12.2%	12.2%	2.7%	0.0%
Assessed factuality/opinions***	38.9%	25.8%	16.7%	9.1%	0.0%	0.0%
Evaluated depth of reporting***	36.1%	21.2%	4.5%	16.7%	0.0%	0.0%
Checked for existence of attribution	29.7%	16.2%	8.1%	8.1%	0.0%	0.0%
Usability/visual appearance	27.0%	27.0%	8.1%	16.2%	0.0%	2.7%
Checked multiple sources for comparison	24.3%	12.2%	8.1%	1.4%	2.7%	0.0%
Clicked through links in news item****	16.2%	15.8%	8.8%	1.8%	0.0%	5.3%
Checked for existence of content producer name	16.2%	8.1%	1.4%	5.4%	1.4%	0.0%
Considered prominence or placement/rank on site	16.2%	9.5%	2.7%	5.4%	0.0%	1.4%
Assessed evenhandedness/balance***	13.9%	9.1%	1.5%	7.6%	0.0%	0.0%
Checked for existence of links in news item****	11.8%	7.0%	3.5%	3.5%	0.0%	0.0%
Swayed by social recommendation	5.4%	2.7%	2.7%	0.0%	0.0%	0.0%

A= Cited use of strategy/factor during narrative

B= Cited use of strategy/factor during interview

C= Cited use of strategy/factor in general though not used during search

D= Strategy/factor used during search without participant citing its use

\* Percentage of participants coded either A, B, C or D during at least one of two searches

\*\* Percentage of all searches in which participants were coded A through D

\*\*\*For participants, n=36; for searches, n=66

\*\*\*\*For participants, n=34; for searches, n=57



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<sup>i</sup> Although some study participants had taken a course that covers media literacy, they were not exposed to specific news literacy instruction on accessing, filtering or evaluating credible or diverse news before this study began.

<sup>ii</sup> The exact number of students enrolled in each course at the time of data collection was unknown, although every course was either filled to capacity or nearly full. The exact number of students who attended classes on the day when the researcher pitched the study was also unknown.

<sup>iii</sup> Nine students indicated “other” when asked how they found out about the study, perhaps indicating they found out through word of mouth.

<sup>iv</sup> The exact number of students who are members of these groups and learning communities was also unknown, as was the number of students who are on respective e-mail listservs.

<sup>v</sup> For this study, a “news outlet” was defined as a site that employs people to report and disseminate news (New York Times, BuzzFeed, etc.) while a “news source” referred to any site for which news is disseminated only (Google, Facebook, Twitter, etc.).

<sup>vi</sup> Students were not held to this timeframe, particularly if they were in the process of reading long articles or had problems finding suitable news stories on social media sites.

<sup>vii</sup> A mixture of lectures and discussion sections.

<sup>viii</sup> On the survey, students were asked to indicate on a 1-5 scale (with 5 being the highest) their interest in news topics. If one topic was rated a 5 and others were 4 or lower, they were asked to search for the former topic. For most students, however, several topics were tied as being of highest interest. In those cases, students were asked to choose among those topics during their news searches.

<sup>ix</sup> For instance, some news sites display what your friends have read on Facebook, and news aggregators take into account what you have searched for and written while on your email.

<sup>x</sup> Instead of requiring that participants begin their searches at two different types of news sites (a news aggregator and directly to a news source; or a social media site and a search engine), the researcher allowed students to begin at whatever two news outlets/sources they indicated on the survey most commonly visiting to start a search.

<sup>xi</sup> Students could search for the same topic or another topic of equal interest.

<sup>xii</sup> Respondents who did not complete more than one-third of the survey were not included in the final results.

<sup>xiii</sup> One respondent did not indicate an age.

<sup>xiv</sup> The total percentage did not equal 100% because some students are double majors

<sup>xv</sup> This included students who indicated “pre-med, pre-law, etc.” that are not a major.

<sup>xvi</sup> Information gathered from the University of Maryland’s enrollment statistics and individual college enrollment data.

<sup>xvii</sup> Many students certainly watched video through their computer and were not counted in this statistic.

<sup>xviii</sup> Each student visited two sites, which equals 74 total cases. In seven of the cases students either were not asked about the extent to which they visited a news source on a mobile device or computer, or their answers could not be deciphered.



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<sup>xix</sup> Information could not be determined about BuzzFeed.

<sup>xx</sup> From the 2012 UMD Fact Card: [http://www.newsdesk.umd.edu/pdf/2012/UMD\\_2012\\_FactCard.pdf](http://www.newsdesk.umd.edu/pdf/2012/UMD_2012_FactCard.pdf)

<sup>xxi</sup> Percentages do not add up to 100 because for each question at least one person did not provide an answer.