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Where's the Learning?
An Analysis of Media Stories of Digital Media and Learning

A FrameWorks Research Report

Prepared for the FrameWorks Institute

by

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INTRODUCTION

The research presented here was conducted by the FrameWorks Institute and sponsored by The John D. and Catherine T. MacArthur Foundation as part of the Digital Media and Learning Initiative. The report examines the explicit and implicit messages — what FrameWorks calls "media frames" — embedded in the media's presentation of issues related to digital media and learning through an analysis of stories from the nation's newspapers, radio and TV news sources. The report also compares FrameWorks' previous research on the cultural models that Americans employ in thinking about digital media and learning to the patterns in media coverage.[i] Specifically, this study addresses the following two questions: *What are the dominant media frames used to convey issues related to digital media and learning? What happens when those dominant media frames come into contact with the cultural models the public uses to think about this issue?*

Media analyses are an important part of the FrameWorks Institute's Strategic Frame Analysis™[ii] approach. Most importantly, media analyses identify a key dimension of what FrameWorks calls the "swamp of public discourse." In this way, a media analysis aims to understand the various, but highly standardized, patterns in the presentation of information on any given issue — the common streams of opinions, arguments and rhetoric that constitute "public discourses."[iii] Since media remain the primary source of information about public policy for average Americans,[iv] media analyses are an important empirical measurement of the narrative and presentational patterns — or frames — that shape public thinking about an issue (see Appendix A for more on the theory of media's effects on public thinking).

In this analysis, we detail the dominant media frames about digital media and learning prevalent in American news, and analyze the likely effects of exposure to these frames on the public's thinking.[v] To do so, we map the content and frequency of patterns and features of media coverage on this issue and use cognitive theory to evaluate the implications of these patterns. We then compare the findings of the media analysis to the findings from a cultural models report based on in-depth interviews with civically engaged Americans across the U.S.[vi] to understand how patterns in media coverage interact with existing ways of thinking. In this way, we examine *how* dominant media frames compare to, and are likely to influence, the cultural models the public uses to think about this issue. As such, this report both underscores the agenda-setting aspects of the media coverage and considers the broader social and cultural impacts of the frames embedded in this coverage.

EXECUTIVE SUMMARY

The media content analysis reveals that, when mainstream news outlets discuss issues related to digital media and learning, the focus is mainly on uses in the business and political sectors, while also featuring stories that emphasize the perceived risks of digital media. The news media largely ignore the potential of digital media as interactive pedagogical tools for K-12 children. The cultural models analysis suggests that this type of coverage is contributing to the public's

skepticism about digital media uses in education. At present, both the media coverage and public understanding of the issue show that, even when the specific words "digital media and learning" are discussed, digital media are rarely connected to learning that happens in the classroom. However, this research also shows that there is significant opportunity to shift public understanding of this issue by framing digital media as an interactive, hands-on and engaged approach to student learning.

Specific findings from the media content analysis are as follows:

- News coverage of digital media and learning focuses largely on issues pertaining to digital platforms for use in the business and political sectors (39 and 26 percent of the total issues mentioned, respectively). These stories discuss digital tools and applications used for professional development and civic engagement that pertain to adults.

- Digital media and learning is also commonly referred to in the news to bring attention to the risks associated with digital media usage (15 percent of total issues mentioned). These stories discuss the need to safeguard privacy, protect children from cyber-bullying and avoid digital distractions from "quality" social time.

- In addition, digital media and learning in the news is associated with issues related to the commercialization of higher education (13 percent of total issues mentioned). The mention of digital media and learning in these stories refers to university marketing, electronic textbook production and sales, and corporate sponsorship of research that leads to commercial digital media products. There is a conspicuous absence of any mentions of using digital media in a pedagogical or educational application in a university context.

- Digital media and learning is associated with educational benefits for children and adolescents in only 4.5 percent of the issues mentioned.

- Children and adolescents are largely absent from news discussions of digital media and learning. The majority of the media stories focus on adults (75 percent). This was followed by college students (13 percent), adolescents (6 percent) and children 12 and under (4 percent).

While limited in number, the few stories that reference digital media and learning as having educational benefits for children and adolescents discuss digital media as a way to build students' capacity for learning, encourage collaboration and participation, and bring "real-world" education to the classroom. These stories demonstrate potential for stimulating a wider and more constructive public discourse on digital media and learning for K-12 children. Furthermore, the association of digital media and learning with civic engagement for adults may also lead to a promising communications opportunity to expand public understanding of digital media as a tool for civic engagement of children and adolescents.

A comparison of the findings between the media content analysis and the public cultural model analysis suggests:

- Both the media and the public focus on the dangers and distractions of the use of digital media. Because of these shared patterns, public thinking and media coverage are likely to coalesce and contribute to a powerfully co-constructed and mutually reinforcing narrative about digital media as dangerous and distracting. This association both explains current skepticism about, and predicts further public resistance to, increased use of digital media in classrooms and communities.

- Members of the public have a strong "consumerist" model of learning, one in which learning happens via the consumption of content accumulated over time, by individuals who are responsible for accumulating as much of that content as possible. This commodity model encourages a quantification of learning, rather than an emphasis on its quality or form. This model is likely strengthened by the news media's emphasis on the application of digital media and learning in business and political contexts.

- A more promising but considerably less prominent overlap between media framing and public mental models is related to hands-on engagement. The small percentage of media stories that discuss the educational potential of digital media use via game-playing and interactive collaboration may evoke the public's recessive thinking about the promise of a more interactive, hands-on and engaged approach to student learning. The public *does* have an available model in which young people become excited about learning through games and acquire knowledge in interactive ways that move beyond simple "book" learning, but, at the moment, this positive model of learning is not linked to digital media in the public's thinking. To the extent that digital media are communicated in a way that taps into the public's recessive models of interactivity, hands-on engagement and playful interfaces, the notion of using digital media in education for children is likely to find traction.

The next section provides background and context for the current study, followed by a more detailed discussion of the findings summarized above.

BACKGROUND LITERATURE: EXISTING ANALYSIS OF MEDIA COVERAGE ON DIGITAL MEDIA AND LEARNING

Previous content analyses that examine how mainstream media outlets portray digital media learning to the public are sparse, but a recent study from the USC Annenberg School for Communication and Journalism provides useful background and context for the present research.

In the study, "Talking Past Each Other: Academic and Media Framing of Literacy"[vii], Katherine Ognyanova addresses the question of whether and how discussions of literacy in mainstream media have been influenced by the recent turn in academic discourse towards new media literacy. The author questions whether the ideals of new media literacy are reaching educators, policymakers and the general public. The study suggests that there are significant differences between the ways that academic experts and the media currently discuss literacy.

Ognyanova uses a semantic and frame analysis approach to compare thematic coverage of literacy. She compares articles on literacy found in *The New York Times* from 2006 to 2010 with academic literature from the same period. Most of this academic literature derives from Henry Jenkins' seminal study, "Confronting the Challenges of Participatory Culture: Media Education for the 21st Century" (2006).[viii]

From her analysis, Ognyanova identifies a new literacy frame that dominates the academic discourse and a legacy literacy frame that pervades the media discourse. The new literacy frame, characteristic of the academic literature, relates to digital skills, creative expression, collaboration, participation and play in education. This literature also discusses the opportunities and challenges faced by education in an increasingly complex digital media environment.[ix] In contrast, the legacy literacy frame invoked by *The New York Times* coverage relates to traditional literacy skills and the educational institutions those skills are historically associated with. These media discussions focus on the need to develop basic reading skills and competencies.

The main finding from Ognyanova's research is that the mainstream media continue to conceive of literacy in terms of conventional "book learning," whereas academic scholars now include discussions of digital media and learning in their work on literacy. There is an important caveat to this study, however, that informs the present analysis. As Ognyanova states, "This study does not imply that *The New York Times* never covers issues related to students and digital tools, online games, social networks or collaboration platforms. On the contrary, those are likely to be prominent topics appearing quite frequently in the publication. What this analysis shows is that they are not discussed in the context of literacy."[x] If digital media and learning is not associated with literacy, then what *is* it associated with? The following analysis focuses on this very question and examines how mainstream media characterize digital media and learning to the public, as well as how those discussions intersect with public perception of the issue.

METHODS AND DATA

This research is guided by two primary goals: (1) to examine how topics related to digital media and learning are regularly treated in the media, and (2) to explore the likely impact of these patterns on the public's thinking. In order to address these goals, the analysis is divided into two stages: (1) a content analysis based on a qualitative and quantitative examination of media materials that reference digital media and learning and related terms, and (2) a cognitive analysis of the patterns in these materials in relation to previous cultural models interviews. Descriptions of the data and analytical techniques are provided below.

Media Data

A recent Pew Center study on news consumption trends in the U.S. suggests that Americans receive their daily news from a combination of newspapers (both print and online) and broadcast news sources, with a smaller percentage of their news information coming from radio sources.[xi] Furthermore, related research shows that mainstream newspaper reports account for, or drive, the primary content of online news content.[xii] As such, the data set used for this study included national newspaper articles, television broadcasts and radio segments from mainstream news

outlets from February 19, 2010, to November 19, 2010. Using the LexisNexis database (a comprehensive source for media data), sources were selected according to circulation/viewership statistics, geographical diversity and database availability. The sample included the following newspaper sources: *The Washington Post, USA Today, San Jose Mercury News, New York Post, The New York Times, Los Angeles Times, Houston Chronicle, The Denver Post, Chicago Sun-Times,* and *The Atlanta Journal-Constitution.* The sample also included national television newscasts from ABC, CBS, NBC, CNBC, MSNBC, CNN and FOX News Network, as well as radio stories from National Public Radio.

Six search terms were created by combining each of the following three terms: "digital media," "new media" and "social media," with each of the following two terms: "education" and "learning." For consistency, we refer to the term "digital media and learning" throughout this study, though it is important to point out that all six terms (including, for example, "social media and education" or "new media and learning") were used as search terms in the analysis. In this way, the search was designed to capture stories that covered digital media in an educational context and avoided flooding the sample with articles about digital media unrelated to education or learning. After duplicate articles were removed, a final sample of 412 articles was identified.

Media Content Analysis

The media content analysis was conducted in three stages. FrameWorks first constructed a codebook based on a sub-sample of 48 media materials from the larger sample of 412. We subjected this sub-sample to a qualitative thematic analysis that drew upon standard coding categories identified both in previous FrameWorks content analysis research and in the framing literature more generally.[xiii] Those coding categories include:

(1) storytelling style (episodic vs. thematic[xiv]),
(2) news section,
(3) age group focus of material, and
(4) types of messengers/experts cited.

Additionally, we used a grounded theory approach[xv] to identify

(5) emergent issues in the set of materials under examination, and
(6) the presence or absence of issues previously identified as integral components of the field of digital media and learning.[xvi]

Examining this last category allowed us to measure whether digital media and learning, as proposed by those in the field, was making its way into the media discourse on this topic. Codes included in the codebook and more specific justifications for their inclusion are described in Appendix B.

After the codebook was developed, two researchers were trained in its application. To test for inter-coder reliability, each researcher coded a set of 25 randomly selected pieces from the sample. The two researchers achieved an intercoder reliability score of 0.8 using Holsti's coefficient — indicating a respectable 80 percent agreement across the coded themes. After the

reliability test, the remaining articles were coded and the resulting quantitative data were subjected to statistical analysis. This statistical analysis examined the frequency of codes in each category. In addition, selected cross-tabulations were computed to examine relationships between codes.

The third part of the media content analysis includes a qualitative examination of the results of the quantitative findings. This analysis provides context and examples from news stories that illustrate how the media present digital media and learning to the public.

Cultural Models Data

The cultural models findings referred to in this document are based on 21 in-depth interviews with civically engaged Americans in Philadelphia, Penn., Jacksonville, Fla., and Los Angeles, Calif., conducted by three FrameWorks researchers in September and October 2010. Informants participated in one-on-one, semi-structured "cultural models interviews." Consistent with interview methods employed in psychological anthropology, cultural models interviews are designed to elicit ways of thinking and talking about issues — in this case, ideas about learning, digital media and the ways these ideas might be connected. Patterns of discourse, or common, standardized ways of talking, were identified across the sample using a basic grounded theory approach to thematic analysis. These discourses were then analyzed to reveal tacit organizational assumptions, relationships, propositions and connections that were commonly made but taken for granted throughout an individual's transcript and across the sample. In short, our analysis looked at patterns both in what *was* said (how things were related, explained and understood) as well as what was *not* said (shared, but taken-for-granted, assumptions). The results of this study are published in the 2010 FrameWorks Institute report, "Faster and Fancier Books: Mapping the Gaps Between Expert and Public Understandings of Digital Media and Learning."[xvii]

Cognitive Analysis

In the cognitive analysis component of this report, we compare findings from the media analysis with results from the cultural models interviews in order to consider how media frames are likely to intersect with those cultural models that currently inform public thinking. This analysis addresses multiple patterns of intersection, including how media frames might (1) cue and strengthen existing cultural models, (2) conflict with and challenge existing models, and/or (3) fail to address a topic such that extant patterns of thinking are left to "fill in the blanks." In this way, the media analysis enables FrameWorks to identify the likely cognitive impacts of media framing and to use this assessment to formulate strategic recommendations for experts and advocates who communicate about digital media and learning.

FINDINGS

Media Content Analysis

1. **The media discussion of digital media and learning is heavily episodic.**

As expounded by Shanto Iyengar, a leading scholar on framing in the media, most stories in the media are told in an episodic style.[xviii] This style of presentation highlights stories about discrete occurrences or persons and, in so doing, places issues in the private or individual realm. Thematic stories, by contrast, focus on issues and trends over time. This type of story examines issues at a community or systems level and directs attention to more ecological solutions in public policy arenas. In this analysis, the vast majority of the stories in the media are told in an episodic fashion (86 percent). Rarely does the mainstream media discuss digital media and learning in relation to larger issues that affect society.

The media's use of episodic stories creates the perception that digital media and learning is primarily an issue at the individual level of impact. This obfuscates the notion that digital media and learning is a topic with social or extra-individual significance. In the news, digital media and learning are presented as occurring in discrete contexts (rather than as part of a process over time) among individuals who accrue individual benefits. The media fail to portray digital media and learning in terms of a collective endeavor with societal impacts. This hinders the public's ability to view digital media as having a larger significance for society.

2. **When digital media and learning stories are found in newspapers, they are typically in the National/Local or Business sections.**

The majority of stories on digital media and learning are found in newspaper sources (58 percent). This is followed by stories found in television sources (37 percent) and radio sources (5 percent). When stories about digital media and learning are found in specific sections of newspapers, they occur primarily in national/local news (40 percent) and business/finance sections (25 percent). It is notable that only 3 percent of the stories on digital media and learning in the newspapers are found in education sections.

Table 3. Placement of Newspaper Articles (N = 241 Articles)

Media	Count	Percent
Local/National News	96	40
Business/Financial	60	25
Education	6	3
Op-Ed	5	2
Science/Health	3	1
Arts/Culture	2	0
International News	1	0
Other	68	28

By placing stories on digital media and learning in a national, local or business context, the media fail to convey the relevance of digital tools in an educational setting. This pattern of coverage makes it difficult for ordinary Americans to see digital media and learning as an educational issue. The fact that such stories rarely fall in the education section is evidence that

the media do not conceive, at least at an implicit level, of digital media and learning as having pedagogical implications in a school setting.

3. Digital media and learning is about adults and college students.

The vast majority of the media stories that comprise this sample focused on adults (75 percent). This is followed by college students (13 percent), adolescents (6 percent) and children 12 and under (4 percent). Two percent of articles discussed multiple age groups.

Table 4. Age of Focus of Stories (N = 412 Mentions)

Media	Count	Percent
Adults	309	75
College Students/Applicants	53	13
Teens/Adolescents	25	6
Children (12 and under)	18	4
Multiple Age Groups	7	2

In this way, the media coverage implicitly conveys the notion that digital media and learning is an adult topic rather than one that concerns adolescents and children. This compounds the disconnection of the issue from the education sector, resulting in a virtual "lockout" of digital media and learning from the domain of childhood learning.

4. Business professionals and researchers are the most frequently cited experts on digital media and learning.

Business professionals account for almost half (49 percent) of the total messengers mentioned. Other messengers include technology and business researchers (not working in the field of digital media and learning) (25 percent), technology reporters (7 percent), parents (5 percent), college students (5 percent), K-12 students (4 percent), school administrators (3 percent), digital media and learning advocates (2 percent) and teachers (1 percent).

Table 5. Messengers Cited (N = 301 Messengers)

Messenger	Count	Percent
Business Professionals	144	49
Researchers (non-DML)	74	25
Tech Reporters	20	7
Parents	16	5
College Students	14	5
K-12 Students	12	4
School Administrators	12	3
DML Advocates	7	2
Teachers	2	1

The types of messengers cited further engrain the idea that digital media and learning is a topic that concerns *adult business practices.* Moreover, this pattern in the coverage assigns ownership of the field to a set of experts who are neither distinctly pedagogical in their focus nor leaders in the field.

5. **Coverage of digital media and learning mainly focuses on issues related to economics, politics, threats, and commercialization and social interaction within colleges.**

Economic and political issues form the bulk (65 percent) of the issues mentioned in this sample. This is followed by discussions of threats in regards to digital media use (15 percent) and commercialization of higher education and social interaction between college students (13 percent). Only a small percentage of media stories cover issues related to digital media use in education of children and adolescents (4 percent).

Table 6. Issues in Digital Media and Learning (N = 440 Mentions)

	Count	Percent
Economic Issues:		
Employment/Business Development	129	28
Self-Promotion	28	6
Advertising	21	5
Subtotal	**178**	**39**
Civic and Political Issues:		
Civic Engagement	43	9
Candidate Promotion	22	5
Charitable Causes	13	3
Alternative News	9	2
Government Accountability	7	2
Other	13	3
Subtotal	**117**	**26**
Digital Media Threats:		
Privacy	21	5
Cyber-Bullying	19	4
Distraction	15	3
Digital Divide	6	1
Health impacts	4	1
Plagiarism	1	0
Identity Theft	1	0
Subtotal	**67**	**15**
College-Related Uses:		
Social Interaction	32	7

Online College Applications	10	2
Digital Textbooks	9	2
Marketing (Online) Universities	8	2
Subtotal	**59**	**13**
Digital Media and Education for K-12 Children:		
Science and Math Education	8	2
Educational Video Games	5	1
Digital Citizenship	4	1
Digital Cultural Production	2	0.5
Subtotal	**19**	**4.5**

5a. The coverage of digital media and learning is primarily concerned with economic and business issues. Most of the media conversations that mention digital media and learning refer to business applications for adults and working professionals (39 percent). These conversations overwhelmingly focus on the importance of learning how to use digital media tools as a way to create new business products and enhance employment prospects.

Media conversations that relate to business development often mention the use of online platforms for job hunting. An excellent example of this pattern is evident in the following article, entitled "Social Media: A Path to Job Opportunity," in which the author writes:

> With more companies and organizations incorporating social media practices into their operations, you may need social media skills to land — and keep — a job.[xix]

The reporter cites a business professional to substantiate this claim, who says:

> If you're looking for a job in a village of 30 people, your chances are slim. Your chances are better in a village of 300 people, and many times better in a village of three million people. That's the advantage of using social media sites like LinkedIn, Facebook and Twitter to boost your job search.[xx]

Other articles invoke digital media and learning as a way to advertise business and media outlets, as well as a way to stay "current" and promote oneself online. A CNN Newsroom anchor states:

> You know, at CNN we're always asking you to follow us on Facebook and Twitter, and we realize that not everyone is on the social media bandwagon. We don't want you to feel left out of the conversation. So with school coming back in, you'll want to keep up with the kids. We invited our tech wiz, Katie Linendoll, to give you an upgrade.[xxi]

In this way, the media position the need to learn about digital media primarily as a means to profile individuals and companies for business and professional development. The fact that such a large percentage of stories falls under this category further engrains perhaps the most dominant perceptual pattern in the media coverage of digital media and learning — that digital media and learning is about business applications for adults.

5b. Digital media and learning relates to politics and civic action for the voting-age public. Another dominant theme in the media's presentation of digital media and learning is the emphasis placed on the use of digital media for promoting or stimulating political or social action (26 percent). Such discussions focus on digital media as a tool for civic engagement, managing political candidate public relations and promoting charitable causes. All of these discussions (100 percent) are in relation to political and/or civic activities for the adult public.

In these stories, digital media and learning is overwhelmingly portrayed as a way to involve individuals in reporting on election issues. This is particularly true for election campaigns abroad, in places where election fraud and violence may be prevalent. For example, a National Public Radio (NPR) program states:

> All over the world, people are using new media in new ways, for example mapping election violence. During the 2008 elections in Kenya, for example, aid workers there created a platform called Ushahidi, where Kenyans could report violence across the country by text message then plot them all on a map.[xxii]

When invoked in this manner, digital media and learning is about empowering people to use digital media as a form of citizen journalism and to connect people with social issues. Several articles in the sample refer to digital media as a way to educate people on social causes and create communities for civic action.

A sizeable proportion of the articles that deal with civic and political functions of digital media and learning refer to digital media as a platform for promoting political candidates. These articles discuss the need for political candidates to learn about and use digital media in a way that facilitates engagement with constituents. There are also mentions of the need for politicians to recognize and learn about the power of digital media to influence the outcomes of campaigns. For example, a *USA TODAY* article states:

> "The digital revolution means everything is recordable, sortable and findable," says Joe Lockhart, a Democratic media consultant and former White House press secretary in the Clinton administration. "There's a much greater impact when you can actually see and hear somebody saying something stupid. You get moving pictures in high definition, and there's no way to wriggle out of it."[xxiii]

As stated, this type of coverage refers to civic and political applications for adults. In contrast, digital media and learning advocates focus heavily on the use of online platforms for *youth* civic engagement. Despite this difference in demographic focus, the overlap in function may present an opportunity for advocates to communicate about the benefits of digital media for the civic socialization of a new generation of citizens.

5c. Digital media and learning is often associated with threats to privacy, cyber-bullying and distractions from "quality" social time. Digital media is also portrayed as a threat from which people should be protected (15 percent). Such articles discuss digital media as an invasion into "real-world" social interaction. They also often invoke parents' use of digital media

hardware, such as smart phones, that interfere with time spent with family and children. An *Atlanta Journal-Constitution* article's description of one man's experience with his cell phone when on vacation with his family typifies such discussions:

> On a boat dock preparing for a vacation cruise around Lake Keowee, Joe Schab suddenly thought of something he wanted for the trip. He pulled out his Droid X smart phone and texted his wife, just up the hill at the family's rented lake house. Could she please send cold refreshments his way? But before he could press send, his new high-tech phone slipped out of his hands. Splash! It vanished into the deep blue.
>
> Schab, who had always been wired, connected, suddenly felt uneasy. He fretted for 24 hours until he decided to let his anxiety, like his phone, go.
>
> The result? Schab, wife, Amanda, and kids, Nick, 8, and Sarah, 7, had their best vacation ever. They went boating. They took in the cool breeze. They played Monopoly. They explored waterfalls. Best of all, Schab wasn't drifting away from the moment to check e-mail or jumping every time his phone vibrated. Instead, he was wired to his family, connected to the people who matter.
>
> It was an "aha!" moment that many people like Schab are having. As technology has made it ever easier for people to be wired all the time, obsessive — some might say excessive — use of cell phones and smart phones has become epidemic, from kids on a first date tweeting or texting instead of engaging in a real-life conversation, to parents fading from real life into virtual worlds.[xxiv]

Other discussions of threats use terms such as "screen invasion," which describes people's "constant connection to a digital screen."[xxv] In order to encourage face-to-face social interaction, these sources report on solutions such as "offlining," or setting strict limits to time spent using digital media.[xxvi]

Cyber-bullying is another frequent threat discussed in these articles. Cyber-bullying is most commonly associated with children and adolescents (69 percent of the cyber-bullying mentions in the sample were related to teens and adolescents). In this way, the media present digital media as a particularly dangerous tool for bullying among school-aged children. One story states:

> It's the least physical and non-confrontational but perhaps the most public way to humiliate and intimidate others: cyber-bullying.[xxvii]

Some of these media conversations occurred in response to the October 2010 suicide case at Rutgers University. As a result, many cyber-bullying articles evoked a sense of "moral panic" and reference possible dire effects of online taunting. For example, the *San Jose Mercury News* states:

> Bringing more attention to cyber-bullying has become vital considering the tragic news of the suicide of a Rutgers University student who had been bullied online. Students of all

ages need monitoring and instruction, and everyone deserves to be safe from bullies, whether they are on the Web, at work or on the playground.[xxviii]

In positioning digital media as a source of threats to safety, the media caution readers to monitor or limit use. Adults are positioned as needing to protect children and teens by carefully restricting or overseeing children's online activities. This is likely to reinforce the notion of digital media tools as invasive and dangerous. This dominant pattern in the media also individualizes the issue by offering solutions that are largely a matter of individual or parental choice and responsibility, rather than presenting solutions that have societal considerations or more public notions of responsibility. This contrasts considerably with the way that digital media and learning advocates position the use of digital tools for children. Experts on the issue support notions of adult mentoring in a way that supports positive use of digital media. They refer to the concept of "digital citizenship," which includes a set of guidelines that adults use to help young people responsibly navigate the online sphere. Introducing the ideas of digital citizenship and positive adult mentoring of digital media use may be a difficult task so long as the media continue to invoke "digital media fears."

5d. Digital media and learning relates to commercial applications for digital technology at the college or university level. These discussions (13 percent) relate to the production of digital textbooks, online applications, online university marketing and digital media research centers at colleges. Another part of these discussions focus on digital media platforms for social interaction for the college-aged sector.[xxix]

In terms of commercial applications, digital media is seen as way to market universities online to prospective students, as well as make it easier for students to apply. *The New York Times* reports on the use of an online "word cloud" system that New York University will use to attract students to its School of Continuing and Professional Studies.[xxx] Another *New York Times* article writes on third-party digital platforms that are available to save students time when applying to colleges.[xxxi]

A few articles mention the emergence of new digital media research centers at universities. It is interesting, however, that these centers are portrayed as centers for research on business applications of digital media. Consider the *Los Angeles Times* article on a new research center at the University of Southern California that works with corporations to develop new digital media products:

> By focusing on emerging-media technology, the lab will be working in areas where good ideas can become billion-dollar industries. The lab is explicit about its symbiotic relationship with business, noting that in addition to being a technology incubator, it will function as "a bridge to outside businesses that will apply innovations developed at the school."

> The lab's early projects will tackle the evolution of e-books, the rise of Internet-based television systems such as GoogleTV, geo-location systems that allow mobile phones to reveal detailed information about users' physical surroundings, and the growing volume of online data used by journalists.[xxxii]

Digital media is thus portrayed as a means of making college application easier, creating more effective college program advertising, creating wider access to up-to-date textbooks, and providing tools for business development and corporate sponsorship. *What is interesting about these discussions is that there is no mention of using digital media as a pedagogical or educational application in a university context.* In this way, these discussions create the perception that digital media tools are about *packaging* and *adorning* learning material, rather than fundamentally changing and shaping the way that learning happens.

5e. Only a small percentage of stories on digital media and learning actually focus on educational benefits for children and adolescents. In this small (4.5 percent) slice of the sample, there is discussion of digital media and learning as a way to build students' capacity for learning, to encourage collaboration and participation, and to bring "real-world" education to the classroom. These discussions relate to digital media specifically for science and math education, educational video games, digital citizenship, and teaching children to be digital culture producers.

When sources mention digital media and its educational benefits for children, it is often in relation to science and math education sponsored by the Obama Administration's new "Race to the Top" initiative. The use of digital media and learning in science was seen as particularly relevant for achieving global competitiveness.

Another small percentage of media stories refer to the use of video games or educational centers where students learn to be digital culture producers. A *Chicago Sun-Times* article mentions the development of a new center in a local library called "The Digital Space for Teens." The center uses an online platform called YOUMedia that students can access from the library. The article says:

> The Digital Space for Teens offers eight desktop computers, 96 laptops, two PlayStation 3's with a library of games, and musical keyboards and a recording studio so teenagers can create music, art and poetry, or jump online and talk with peers in the secure, password-protected YOUMedia forum.[xxxiii]

Interestingly, the few articles that mention the use of video games for educational purposes draw upon the digital media and learning vocabulary used by experts on the subject. A *New York Times* article is particularly illustrative for demonstrating how this language is seeping into mainstream media. The article reports on an innovative charter school, *Quest to Learn*, which bases its pedagogy on digital media and learning. The author describes the school's pedagogy and curriculum as an entryway to develop a conversation that questions conventional notions of education. The author asks:

> What if teachers gave up the vestiges of their educational past, threw away the worksheets, burned the canon and reconfigured the foundation upon which a century of learning has been built? What if we blurred the lines between academic subjects and reimagined the typical American classroom so that, at least in theory, it came to resemble a typical American living room or a child's bedroom or even a child's pocket, circa 2010

— if, in other words, the slipstream of broadband and always-on technology that fuels our world became the source and organizing principle of our children's learning? What if, instead of seeing school the way we've known it, we saw it for what our children dreamed it might be: a big, delicious video game?

It is a radical proposition, sure. But during an era in which just about everything is downloadable and remixable, when children are frequently more digitally savvy than the adults around them, it's perhaps not so crazy to think that schools — or at least one school, anyway — might try to remix our assumptions about how to reach and educate those children. What makes Quest to Learn unique is not so much that it has been loaded with laptops or even that it bills itself expressly as a home for "digital kids," but rather that it is the brainchild of a professional game designer named Katie Salen. Salen, like many people interested in education, has spent a lot of time thinking about whether there is a way to make learning feel simultaneously more relevant to students and more connected to the world beyond school. And the answer, as she sees it, lies in games."[xxxiv]

This type of discussion introduces the notion of the potential educational benefits of digital media for school-aged children to the public. These stories use some of the frames promoted by experts to build support for digital media and learning in the classroom. For example, the *New York Times* author mentions the need to make learning relevant and to connect students to the larger world. The CNN Newsroom reporter connects digital media and learning to cultivating new skills for today's global economy and society. The *Chicago Sun-Times* author discusses digital media and learning as a way to foster collaboration among students at a center where students becomes content creators. These authors also include thematic elements in their stories that will likely cause readers to consider the larger implications of digital media and learning. While the frequency of these stories is limited in comparison to other categories discussed here, such stories provide a glimpse into how a larger public conversation on the educational benefits of digital media can be structured. If news sources understand that digital media can be connected to education for children and adolescents, then it is likely that they will report on the issue in a way that allows the experts to share their story and build public support.

The results of this analysis clearly demonstrate that the media presentation of this issue is quite distinct from that advocated by those in the field of digital media and learning. Even when the terms "digital media," "new media" and "social media" were modified by the terms "education" and "learning" in this analysis, there were very few instances in which the media actually reported on issues of learning and educational benefits for children.

In the following section, we evaluate the possible effects of these patterns in media coverage on the public conception of digital media and learning. The next part of this report assesses the ways that the public typically conceives of digital media and learning, as well as the ways in which the media coverage analyzed above may influence these perceptions.

COGNITIVE ANALYSIS

American cultural models of learning and education have deep roots, both within the collective history of the nation and within the life history of the typical adult American. Almost every

American has his or her own experiences with one or more K-12 school systems, and many, if not most, adult Americans have had their own children in the school system. As such, people tend to have developed strong opinions and perspectives on education and learning.

At the same time, education and learning are not high-profile topics of media coverage — not in the way that politics, sports, movies, crime, celebrity happenings or even the weather are. Put another way, exposure to mediated experiences of learning through media is less concentrated than that on other topics. This is not to say that media coverage has not impacted patterns of American thinking about what education and learning are about, but only that the effects of this coverage are perhaps more limited than on other issues and that they are likely further muted (or at least strongly mediated) by the powerful impact of personal and intimate experiences with schools and learning systems.[xxxv]

In partial contrast, it is likely that American cultural models about digital media have been *profoundly* affected by media coverage, as the excitement of new digital technologies and media has been a consistent topic in news coverage ever since personal computers entered into American homes *en masse* in the 1980s, and even more so since the exponential growth of the Internet from the 1990s through today. At the same time, precisely because digital media have become part and parcel of the furnished landscape of most American homes and businesses, members of the public have strong opinions about digital media and their implications aside from media coverage, especially regarding their children's use.

In summary, news media coverage undoubtedly has and continues to influence public thinking about digital media and learning, even as its influence enters into an already complex and loaded field of associations and experiences.

Summary of Cultural Models Findings

Among the central findings from FrameWorks' cultural models research is that Americans hold largely contrasting models of learning and digital media, and do not have a clear or well-articulated model of their positive interaction.[xxxvi] Rather, the two domains are typically modeled in largely dissimilar, even oppositional, terms — especially with reference to the learning that is supposed to occur within scholastic settings. "In-school" learning is thought to occur within a hierarchal structure, where teachers are in positions of authority, both in terms of *content* (which they transmit to students via instruction from the front of the classroom) and *discipline* (which they maintain via the rules of the classroom and with the support of other staff and regulations). This in-school learning is modeled as something that should be difficult and challenging, requiring both a focused effort and willingness by students to subject themselves to teachers' instructive authority. This in-school learning is also fundamentally dependent upon teachers creating a safe and secure environment where students can focus their efforts without fear, anxiety or distraction.

Digital media, on the other hand, carry a very different set of associations for most Americans. Four dominant models of digital media emerged from FrameWorks' research — all of which present a core challenge to the effort to build a constructive and positive model of digital media *and* learning. First, Americans model digital media use as primarily about *recreation*, and

therefore see it as a rather trivial and unnecessary luxury — an escape or a break from "real life." Second, they understand it as a relatively *passive* way in which children and young people spend their time — one that requires little effort, discipline or practice for its realization. Third, Americans view digital media as a powerful source of *distraction*; our informants described children and youth as so absorbed by their digital screens that they neglect or ignore other important activities in life — familial, scholastic and otherwise. Finally, representing perhaps the most challenging dominant model, Americans view digital media use by children and youth as *dangerous* because it is thought to subject them to unfriendly and even abusive contacts with strangers and other parties.

These starkly contrasting models of scholastic learning, on the one hand, and digital media, on the other, were elicited from informants through separate discussions of each topic. When an effort was made to bridge the two topics — to talk about "digital media and learning" — the results were predictably complicated by the oppositions between the models. The models of play, passivity, distraction and danger used to think about digital media were understood as distinct from, and even a threat to, the demands and goals of a scholastic mode of learning that, informants tell us, is supposed to be difficult, disciplined, focused and safe. When informants did talk about how digital media and learning might intersect, the most common pattern employed was a description of digital media as a fundamental threat to the educational project writ large — in particular as a source of distraction and entertainment that did not and should not have a place in "real learning."

At the same time, there were some promising findings from the cultural models research, most notably that members of the public have a strong and positive model of a particular kind of learning called "hands-on" learning. This form of "learning though doing" was said by many to be a more effective way to learn, especially for learning *how* to do something. It was also described as more conducive to cultivating interest on the part of students, who can experience a sense of engagement in the process of doing a learning activity. While informants saw scholastic learning as typically dominated by a contrasting style, many spoke to the positive potentials of building curricula that incorporate more experiential, engaged, "hands-on" learning in the classroom. For the few informants who were able to articulate a positive model of digital media and learning, the strengths of this hands-on action and engagement were central to their sense of its potential promise.

We now turn to considering how the cultural models documented by FrameWorks might intersect with the news media's coverage of digital media and learning. To do so, we consider three patterns of intersection: (1) areas where the media coverage is **consonant** with the public's dominant cultural models, (2) areas of news media coverage that **differ** from or are largely absent from the public's thinking, and (3) **spaces left unfilled** in the media coverage which leave opportunities for the public to fall back on their own default patterns of thinking. Finally, we consider how the news media's coverage compares to the vision outlined by experts in the field of digital media and learning, allowing us to measure how wide the gap is between what experts want communicated and the reality of the current news media landscape.

Consonances

The following are patterns of media coverage that are consonant with cultural models in mind and are likely to result in a further entrenchment and reification of specific cultural models that Americans already apply in understanding digital media and learning:

- **Models of danger and distraction:** The strongest overlap between how the media frame digital media and how the public models them is a notably problematic one: Both are concerned with the threats and challenges digital media pose to the safety of children and young people. Concerns with cyber-bullying, transgressions of privacy, and distractions and compromises to "quality" family and social relationships are strongly echoed in both research arenas. It is likely that media coverage has contributed in substantive ways to these concerns, in particular on the bullying and privacy fronts, where media coverage has been extensive. At the same time, the strength of these negative models likely results not from news media coverage exclusively, but also from people's experiences with digital media and their children's use thereof. Media coverage about these various threats — bullying, compromises to privacy, and use or overuse that distracts from other important commitments in life — is likely to reinforce what is already a robust model of concern about children and youth's patterns of use. In reinforcing that safety concern, the coverage further predisposes parents, teachers and other adults to position themselves against the use of digital media in learning. Borrowing a theme from media coverage of children's issues more generally, digital media and learning is simply the latest societal threat from which parents must "bubble wrap" their children.[xxxvii]

- **Commodity/consumerism model:** Members of the public have a strong consumerist model of learning, one in which learning happens via the consumption of content accumulated over time, by individuals who are responsible for accumulating as much of that content as possible. This commodity model encourages a quantification of learning, rather than an emphasis on its quality or form. This model is likely strengthened by the news media's emphasis on the application of digital media and learning in business and political contexts. In this emphasis, the purpose of learning is to facilitate gains in profit or power, and a parallel trajectory is envisioned between "more learning" and "more gain," with "gain" defined in terms of objective advantages on the financial and partisan fields of play.

- **Model of hands-on engagement:** A more promising but much less prominent overlap between media framing and the public's cultural models is related to hands-on engagement. The small percentage of media stories that discuss the educational potential of digital media use via game-playing and interactive collaboration conjoin with the public's recessive thinking about the promise of a more interactive, hands-on and engaged approach to student learning. The public *does* have an available model of young people becoming excited about learning through games and acquiring knowledge in interactive ways that move beyond simple "book" learning. At the moment, however, this positive model of learning is not linked to digital media in the public's thinking. To the extent that digital media is communicated in a way that taps into the public's recessive

models of interactivity, hands-on engagement and playful interfaces, the notion of using digital media in education for children will likely find traction.

Divides and Dissonances

Media coverage about the domain of "digital media and learning" include two strong trends that are notably absent in the cultural models findings — specifically that digital media and learning is largely about (1) business applications for adults and (2) political and civic action. Neither of these associations emerged with strength in our cultural models research with members of the American public; they represent patterns of media coverage that either contradict or have yet to impact public thinking with sufficient strength to shape a conversation on the topic.[xxxviii]

One promising communication direction, however, is the news media emphasis on digital applications for political and civic action. Since much of the discussions that fall into this category refer to new means of civic engagement for adults, it follows that such discussions may present a discursive opportunity to introduce the notion of digital media as tools for the civic education and socialization of children and youth. If this type of communication is to have an impact on public thinking, though, careful framing will be required, perhaps using a larger, or "master," value, such as citizenship and democracy. When the public understands digital tools as contributing to the public good, and sees that these tools can be used to enhance the participation of future voters and engaged citizens, we may see a stronger convergence between media coverage and public thinking on this issue.

Gaps in Media Coverage

There are clear gaps in the media coverage — topics that go largely unaddressed and allow patterns of default thinking by the public to persist and be applied unchallenged. These absences in media coverage are likely to be filled in with dominant cultural models, making subsequent ideas or corrections put forward by experts on digital media and learning more difficult to communicate:

- In their focus on digital applications for adults, the news media lack coverage about the critical import of empowering children and youth with digital media skills. This allows the public to default to two interpretive models: (1) that these media are safe and viable for mature adults to use, but too risky and dangerous for children's use, and (2) that professional education in digital media is a good idea, but building digital media education into our K-12 curriculums remains a dangerous proposition. As long as the news media's coverage continues to focus almost exclusively on *adult* digital media education and learning, the American public will continue to operate with their default assumption — that children's digital media use is at best trivial and at worst dangerous, and does not belong in America's classrooms.

- The news media's coverage largely lacks consideration of the relationship between digital media skills and more traditional skills, thereby allowing the public to default to two dominant assumptions: (1) that embracing digital media within and beyond the

classroom will detract from instruction in "basic skills" and is therefore a bad idea, and (2) that digital media skills are "extras" — luxurious additions to basic skills that can be entertained if, and only if, the latter have been well established. Both of these assumptions are premised on an assumed opposition between traditional scholastic skills and new digital media skills, as if one comes at the expense of the other. This creates the perception of a zero-sum game between teaching basic skills or this "extra" set of not-as-critical digital media skills.

Media Coverage and the Expert Vision

Relative to expert thinking about the positive potential of digital media and learning for K-12 education, the news media's coverage of the topic is both sparse and typically off-topic. It is worth noting again that only 3 percent of the stories on digital media and learning are found in the education section of the news sources analyzed and only 4.5 percent of stories correspond with some of the positive affordance of digital media identified by experts. These occasional references are, however, sporadic relative to the larger and more problematic patterns described above. The powerful themes of experiential and contextual learning, and of enhanced collaboration and participation, barely register in the media.

All of the following represent key expert assertions that are notably **absent or weak** in the news media's coverage:

Accelerated and expanded learning. Digital media can accelerate and expand the learning process for students because of the scope, speed and ease with which information, creative content and feedback can be accessed, distributed and exchanged.

Mentored personalized learning. Digital media are ideal for creating more flexible and adaptable learning environments, where students can "carve out" personalized paths of learning and teachers can shift into the roles of mentors and guides.

Transferability of skills. Digital media skills are directly transferable to other arenas of civic, professional and personal life, including research, design, problem solving, networking, navigation, assessment and writing skills, as well as participation and leadership in interest-driven groups.

Basic skills. Digital media can be used to teach, develop and augment traditional scholastic skills, including reading, writing, math, science, research and critical thinking.

Systems-thinking and causal-reasoning skills. The speed, scope and power of digital media offer students new opportunities to understand, problem-solve, and design complex systems and functions.

Critical, safe, and dignified use. Children and youth need guidance in how to discern the credibility of the information they access and how to navigate digital media safely. For experts, this is an argument for the inclusion, not exclusion, of digital media into classrooms and other community learning institutions.

Connecting schools and community. A new educational paradigm that embraces digital media promises to strengthen the connection between schools and other community members as people come together around student learning across multiple institutions — including schools, libraries, homes, public spaces, businesses, museums, colleges, clubs and interest groups.

Broadened horizons and heightened respect for difference. Digital media offer children and youth unprecedented opportunities to communicate and collaborate with different people across the country and globe, and to learn tolerance and respect for those who see the world differently.

In sum, the heart of the digital media and learning story remains underdeveloped and untold in the current media repertoire.

CONCLUSION

The primary finding that emerges from this study is that digital media and learning is not currently associated either in the media or in public thinking with educational applications for children and adolescents. Instead, the strongest consonance between dominant media frames and dominant American cultural models is the shared focus on the dangers and distractions of children's use of digital media. There is likely a strong reinforcement effect at work here — wherein both public thinking and media coverage coalesce to construct a dominant negative narrative that predisposes members of the media and the public towards skepticism about digital media and learning in American classrooms and communities. Furthermore, the media's framing does not substantively overlap with public thinking about digital media or its intersections with the field of learning. As such, the news media's coverage of "digital media *and* learning" in primarily adult arenas is unlikely to translate into new and more promising ways for the public to think about their joint applications for children and youth.

How do we bring learning for youth into media and public conversations on digital media and learning? Is there a way to structure these conversations so that the media and the public understand the larger societal benefits of digital media educational applications for K-12 students? There are two promising directions that are worth considering for future communications research on this issue. First, there is significant opportunity to shift public understanding by framing digital media as an interactive, hands-on and engaged approach to student learning. There is a flicker of recognition in both in the media and among the public that digital media carry a set of interactive, creative affordances that generate student interest and engagement and provide the foundation for a deep form of learning and skill-development. This recessive model is currently buried in both news media and public thinking under an avalanche of less constructive ways of thinking about the field of digital media and learning, but it exists as an important target for future communications efforts.

The second promising direction is in relation to media associations with digital applications for civic engagement. While this notion is currently absent in public understandings of digital media, about a quarter of all media coverage on this issue is in relation to digital platforms for civic and

political involvement. What is missing from the media coverage is an overarching value that communicates, for example, how the use of digital media contributes to the strength of the public sphere and democracy in the country. When digital media and learning advocates stress the importance of digital tools for shaping the civic development trajectory of youth, and when this is connected to a larger value that illustrates how this leads to a stronger and more engaged citizenry, it is possible that public understanding of this issue may shift. Further FrameWorks research will develop and test values for their effectiveness in expanding public understanding on this issue.

These two directions signify an important discursive opportunity for those in the digital media and learning field. By linking digital media use to an interactive and engaging form of education for children that also has wider potential for their future civic participation, experts and advocates in this field may contribute towards a more informed public discussion that leads to the support of digital media and learning programs and policies.

About FrameWorks Institute

The FrameWorks Institute is an independent nonprofit organization founded in 1999 to advance science-based communications research and practice. The Institute conducts original, multi-method research to identify the communications strategies that will advance public understanding of social problems and improve public support for remedial policies. The Institute's work also includes teaching the nonprofit sector how to apply these science-based communications strategies in their work for social change. The Institute publishes its research and recommendations, as well as toolkits and other products for the nonprofit sector, at www.frameworksinstitute.org.

Please follow standard APA rules for citation, with FrameWorks Institute as publisher. Arvizu, S., Simon, A., Lindland, E., & O'Neil, M. (2011). *Where are the kids? The absent story on digital media and learning among the media and the public*. Washington, DC: FrameWorks Institute.

APPENDIX A: THEORETICAL BACKGROUND ON MEDIA EFFECTS

Scholarly work on mass communication generally begins with the premise that the media affect the way people understand the world they live in. Media framing effects are defined as the ways in which "events and issues are packaged and presented by journalists" that "fundamentally affect how readers and viewers understand those events and issues."[xxxix] However, the strength of those effects and the exact mechanisms by which the media influence the public's attitudes, opinions and processes of making meaning have been subject to much scholarly debate since the turn of the last century.[xl]

Recent work on the public's reception of media messages has rejected the determinism that characterized early studies of mass communication. That is, media scholars now recognize that the effect of media frames in determining public thinking about social issues is not unidirectional. Rather, the relationship between the media and the public is now theorized as dialectical, dynamic and socially situated. On the one hand, scholars show that the media actively creates the frames that people use to interpret and engage in public events. That is, frames have an important role in the construction of reality.[xli] On the other hand, scholars recognize that the public draws on preexisting cultural models and past experiences to actively engage with and make sense of media messages. According to sociologists Gamson and Modigliani, "Media discourse is part of the process by which individuals construct meaning, and public opinion is part of the process by which journalists … develop and crystallize meaning in public discourse."[xlii]

Understanding this co-construction, the literature on media framing has empirically documented the links between news frames and patterns in the public's thinking on specific issues. In addition, scholarship has identified the mechanisms by which media affect public perception of social issues. Media frames have been shown to influence *what* enters the mind of audiences who have been exposed to that frame.[xliii] Studies have documented how certain frames increase the likelihood that audiences will draw out predictable implications from a story,[xliv] fill in missing information, and make assumptions about what has occurred based on cues in the media frame.[xlv] In this analysis, we focus on both what is a standard part of the CMH script as well as what is missing in media narratives regarding digital media and learning and how the viewing public implicitly fills in this missing information.

Media frames operate to increase, deepen and enhance or, conversely, suppress and diverge from default thought patterns generated by the story. When media frames are congruent with the public's cultural models, they generally reinforce default patterns of thinking on the issue, although studies have shown that the public tends to accord different weights or priorities to aspects of an issue than do journalists.[xlvi] When media frames are inconsistent with or contradict the public's understanding of that issue, scholars have found that viewers often pay more attention to the frame so that they can either incorporate it into their existing understandings or reject it entirely. For example, studies have shown that when people are exposed to cues in political messages that are inconsistent with their stereotypes about a racial or ethnic group, they engage in *conscious*, rather than automatic, processing of the racial content of the message.[xlvii]

Price et al. describe the enhancing and suppressing capacities of media frames as a kind of "hydraulic pattern, with thoughts of one kind, stimulated by the frame, driving out other possible responses." [xlviii].

Finally, media frames also have evaluative implications among the audience, specifically audiences' perceptions of what *causes* the social issue being covered and what *should be done to address the problem*. Shanto Iyengar's classic study of episodic versus thematic framing demonstrated a powerful link between media frames and an audience's subsequent evaluation of an issue. For example, he found that when subjects were exposed to episodic frames regarding poverty, or frames that represented poverty as a discrete, isolated and individualistic event, they were more likely to make personal rather than systemic attributions.[xlix] This study confirms the assertion that media frames not only impact how people think about an issue at the moment they read or watch the news, these frames also have measurable impacts on their subsequent evaluations and decision-making processes about the issue.

APPENDIX B: CODEBOOK CATEGORIES

Storytelling Style: Storytelling style refers to whether an issue is discussed in an "episodic" or "thematic" context. As expounded by Shanto Iyengar, a leading scholar on media framing, most stories in the media are told in an episodic style.[1] This type of coverage keeps the issue in the private or individual realm by highlighting stories about discrete occurrences or persons. Thematic stories, by contrast, focus on issues and trends over time. Thematic stories direct attention to contexts beyond the individual and towards the community or systems level to enhance public understanding on an issue. Testing for storytelling style in media materials allows researchers to detect whether the media speak about digital media and learning using a systems-level or individual-level approach.

Source of Materials and Section Placement: We coded for the source of each material as radio, newspaper or broadcast news. We also noted, in the case of newspaper reports, which section the story appeared in (National/Local, Business, Education, Opinion, Science/Health, Arts/Culture, International or other). In this way, we were able to detect the types of media that discuss digital media and learning, as well as identify how the media categorize such discussions.

Age Group: We also inductively coded for the age group focus of the materials. Coders were instructed to note how each media material characterized the target audience (Adults, College Students, Teens, Children or Multiple Age Groups) for digital media and learning. This information was used to detect if the media focus on children and/or teens when they speak about digital media and learning.

Messengers: Our codebook also included a category for "messengers." Messengers refer to the types of people quoted as sources within the materials examined. The FrameWorks Institute has found that the presence or absence of certain types of messengers referenced in materials has implications for what is (and what is not) communicated.[li] Based on our qualitative analysis of the sub-sample, we coded for nine categories of messengers. They include Business Professionals, Researchers, Tech Reporters, Parents, College Students, K-12 Students, School Administrators, Digital Media Advocates and Teachers.

Issues: The bulk of the content analysis was directed towards detecting the mention of specific issues in organizational materials. We examined the types of issues covered in the texts, how issues were defined and conceptualized, how the materials attributed responsibility for issues, the causal stories employed and the solutions proposed. Through a qualitative analysis of the sub-sample, we identified the following issues the media reference in their stories: Economic Issues (Employment/Business Development, Self-Promotion, Advertising)*,* Civic and Political Issues (Civic Engagement, Candidate Promotion, Charitable Causes, Alternative News, Government Accountability)*,* Digital Media Threats (Cyber-Bullying, Child Privacy, Digital Divide, Health Impacts, Plagiarism, Identity Theft, Distraction) and College Issues (Digital Textbooks, Marketing Universities, Research Centers, College Applications, Campus Social Interaction). We also included in the codebook issues related to digital media and learning, as identified by

experts in the field.[lii] Those include Digital Media for Science and Math Education, Digital Citizenship, Educational Video Games, Cultural Production and Adult Mentoring of Use.

[i] See: Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning*. Washington, DC: FrameWorks Institute.

[ii] Strategic Frame Analysis™ includes a variety of methods such as: cultural models interviews, focus groups, media content analysis, cognitive media content analysis, Simplifying Models development and empirical testing of frame effects using experimental surveys.

[iii] Strauss, C. (Unpublished manuscript) *Who belongs here and what do we all deserve? Americans' discourses about immigration and social welfare*.

[iv] Quinn, N., & Holland, D. (1987). Culture and cognition. In Holland, D., & Quinn, N. (Eds.). *Cultural models in language and thought* (pp. 3-40). Cambridge, MA: Cambridge University Press.

[v] See: Gerbner, G., & Gross, L. (1976). Living with television: The violence profile. *Journal of Communication. 26*(2), 172-199.

[vi] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning*. Washington, DC: FrameWorks Institute.

[vii] Ognyanova, K. (2010). Talking past each other: Academic and media framing of literacy. *Digital Culture & Education, 2*(1).

[viii] Jenkins, H., et al. (2006). *Confronting the challenges of participatory culture: Media education for the 21st century*. Chicago, IL: The John D. and Catherine T. MacArthur Foundation.

[ix] Ognyanova, K. (2010). Talking past each other: Academic and media framing of literacy. *Digital Culture & Education, 2*(1), 51.

[x] Ognyanova, K. (2010). Talking past each other: Academic and media framing of literacy. *Digital Culture & Education, 2*(1), 51.

[xi] Pew Research Center (2010). *Ideological news sources: Who watches and why: Americans spending more time following the news, with a commentary by Tom Rosenstiel, director*. Washington, DC: Pew Research Center.

[xii] Pew Research Center (2010). *How news happens: A study of the news ecosystem of one American city.* http://www.journalism.org/sites/journalism.org/files/Baltimore%20Study_Jan2010_0.pdf

[xiii] Center for Media and Public Affairs (2009). *Put down your pencils please: Media coverage of education reform, 2007-2008*. Washington, DC: FrameWorks Institute. http://www.frameworksinstitute.org/assets/files/PDF_Education/pencils_down.pdf

[xiv] Iyengar, S. (1991). *Is anyone responsible? How television frames political issues*. Chicago, IL: University of Chicago Press.

[xv] Glaser, B.G., & Strauss, A.L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine Publishing; and Strauss, A.L., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage Publications.

[xvi] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning*. Washington, DC: FrameWorks Institute.

[xvii] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning*. Washington, DC: FrameWorks Institute.

[xviii] Iyengar, S. (1991). *Is anyone responsible? How television frames political issues*. Chicago, IL: University of Chicago Press.

[xix] (2010, August 22) *Atlanta Journal-Constitution*, AJCJOBS, p. 1G.

[xx] (2010, August 22) *Atlanta Journal-Constitution*, AJCJOBS, p. 1G.

[xxi] (2010, September 4) "Social media 101," CNN Newsroom.

[xxii] (2010), September 21) "Saving the world with apps and Twitter feeds," National Public Radio, Talk of the Nation.

[xxiii] (2010, October 13) Digital revolution lets loose lips move at the speed of sound, *USA TODAY*, News Section

[xxiv] (2010, September 19) Time out from tech, *The Atlanta Journal-Constitution*, features section.

[xxv] (2010, August 24) "Your Brain On Gadgets," National Public Radio, Fresh Air.

[xxvi] (2010, September 18) "University declares a week without social media," NPR, All Things Considered.

[xxvii] (2010, October 22) School confronts online bullying, *The Atlanta Journal-Constitution*, news section.

[xxviii] (2010, October 10) Elementary, my dears: Cyber tricks are not treat, *San Jose Mercury News*, communities section.

[xxix] The majority of these references do not relate to digital media uses for social interaction in a university context, but for the college-aged sector. They include the use of, and applications for, Facebook and related social platforms.

[xxx] (2010, November 9) Ads for N.Y.U. have their words in the clouds, *The New York Times*, Business/Financial Desk.

[xxxi] (2010, November 7) There's more than one way to apply to college, *The New York Times*, Education.

[xxxii] (2010, November 18) USC to nurture digital culture, *Los Angeles Times*, Business Section.

[xxxiii] (2010, October 16) No limit to role of scientists: High-tech CEOs supporting program to develop interest in science, math, *Chicago Sun-Times*.

[xxxiv] (2010, September 19) Games theory, *The New York Times*.

[xxxv] Shanto Iyengar speaks to this point in his discussion of crime and terrorism, noting that issues with which people have more intimate experience are typically less subject to media framing effects. See Iyengar, S. (1991). *Is anyone responsible? How television frames political issues.* Chicago, IL: University of Chicago Press, p. 26.

[xxxvi] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning*. Washington, DC: FrameWorks Institute.

[xxxvii] Gilliam, F. (2003). *A new dominant frame: "The imperiled child."* Washington, DC: FrameWorks Institute.

[xxxviii] It is important to note, however, that our cultural models research began with a discussion of learning apart from the topic of learning and digital media. On its own, the topic of learning was strongly associated with two modes and locations for learning: (1) scholastic K-12 learning, and (2) "real-world" life learning. Both of these dominant models of learning were subsequently brought into the conversation about "digital media and learning" in the effort to probe whether and how the public does or could envision a positive intersection between the two. Because of the dominance of these models of learning, in particular the strong association of learning with K-12 education, our informants may have steered the conversation away from any other possible associations of learning with digital media, including those identified in the media content analysis. That said, if the public does hold associations of digital media and learning with business applications, political action or university education, they were not sufficiently robust or "top-of-mind" on their own to find their way into our research interviews on the topic. Our public informants simply did not invoke these subject areas in their thinking and talking about "digital media and learning."

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[xl] Scheufele, D.A. (1999). Framing as a theory of media effects. *The Journal of Communication, 49*(1), 103-122.

[xli] McQuail, D. (1994). *Mass communication theory: An introduction* (3rd ed.). London, England: Sage Publications; and Tuchman, G. (1978). *Making news: A study in the construction of reality.* New York, NY: Free Press.

[xlii] Gamson, W.A., & Modigliani, A. (1989). Media discourse and public opinion on nuclear power: A constructionist approach. *American Journal of Sociology, 95*(1), 1-37.

[xliii] Price, V., Tewksbury, D., & Powers, E. (1997). Switching trains of thought: The impact of news frames on readers' cognitive responses. *Communication Research, 24*(5), 481-506. Valkenburg, P.M., Semetko, H.A., & De Vreese, C.H. (1999). The effects of news frames on readers' thoughts and recall. *Communication Research, 26*(5), 550-569.

[xliv] Price, V., Tewksbury, D., & Powers, E. (1997). Switching trains of thought: The impact of news frames on readers' cognitive responses. *Communication Research, 24*(5), 481-506.

[xlv] Gilliam, F.D., Jr., & Iyengar, S. (2000). Prime suspects: The influence of local television news on the viewing public. *American Journal of Political Science, 44*(3), 560-573. Gilliam and Iyengar, for example, demonstrated that local news coverage of crime followed a standard script. Namely, that crime stories are typically about violent crime, feature a particular "type" of suspect, and that crime news often entails racialized imagery. In a series of experiments, they found that even when subjects were exposed to crime stories that did not feature a particular suspect, participants falsely recalled having seen a suspect and a large majority identified the non-existent suspect as African-American. This work and other similar studies have documented that viewing audiences fill information into news stories that follow standard and ubiquitous media scripts.

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[xlvii] Mendelberg, T. (2001). The race card: *Campaign strategy, implicit messages, and the norm of equality.* Princeton, NJ: Princeton University Press. Valentino, N.A., Hutchings, V.L., & White, I.K. (2002). Cues that matter: How political ads prime racial attitudes during campaigns. *American Political Science Review, 96*(01), 75-90.

[xlviii] Price, V., Tewksbury, D., & Powers, E. (1997). Switching trains of thought: The impact of news frames on readers' cognitive responses. *Communication Research, 24*(5), p. 501.

[xlix] Iyengar, S. (1991). *Is anyone responsible?: How television frames political issues.* Chicago, IL: University of Chicago Press.

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[lii] Kendall-Taylor, N., & Lindland, E. (2010). *"Faster and fancier books": Mapping the gaps between expert and public understandings of digital media and learning.* Washington, DC: FrameWorks Institute.