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Digital Literacy, Libraries, and Public Policy: Report of the American Library Association Digital Literacy Task Force

[para 0] The American Library Association (ALA) Office for Information Technology Policy (OITP) launched the OITP Digital Literacy Task Force in spring 2011 to bring together literacy experts from school, public, and higher-education libraries to address issues and questions related to digital literacy and national policy conversations (see Appendix A for current member list and affiliations). The Task Force coalesced around the vision that including America's libraries in national, regional, and local digital literacy initiatives will ultimately enhance the information and digital literacy skills of individuals at all stages in life so that they can fully engage in a democratic society.

[para 1] This report of the Task Force provides a broad overview of libraries and digital literacy. It discusses the current policy context, including digital inclusion, education, life-long learning, and workforce development. The report outlines library-specific issues and opportunities. It reaffirms the need for traditional, text-based literacy in reading and writing as a foundation for other literacies. Finally, the report serves as a launching point for the development of a set of recommendations to the Association and the broader library community to continue and expand libraries' engagement and leadership to effect meaningful and sustainable change in our communities. The Task Force will develop these recommendations as a companion report.

DEFINING DIGITAL LITERACY

[para 2] One of the first acts of the ALA Task Force was to determine a common definition of digital literacy that would speak to all types of libraries and the diverse communities we serve: *Digital Literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills.*

Further, a digitally literate person:

- *Possesses the variety of skills – technical and cognitive – required to find, understand, evaluate, create, and communicate digital information in a wide variety of formats;*
- *Is able to use diverse technologies appropriately and effectively to retrieve information, interpret results, and judge the quality of that information;*
- *Understands the relationship between technology, life-long learning, personal privacy, and appropriate stewardship of information;*
- *Uses these skills and the appropriate technology to communicate and collaborate with peers, colleagues, family, and on occasion, the general public;*
- *Uses these skills to actively participate in civic society and contribute to a vibrant, informed, and engaged community.*

-ALA Digital Literacy Task Force (2011)

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[para 3] It also is important to note that digital literacy *must* include mastery of traditional literacy, because digital literacy skills will necessarily change as technology changes. Being digitally literate requires basic reading and writing skills, access to up-to-date digital instruction and a commitment to lifelong learning.

[para 4] The public's attainment of twenty-first century digital literacy skills is essential for the United States to compete economically, educationally, and intellectually in a global environment. Providing broadband Internet access is essential, but access alone is not enough. Basic computer skills and high-level cognitive skills on finding, evaluating, ethically using, creating, and sharing information also are required to create digitally inclusive communities.¹ The Federal Communications Commission (FCC) estimates that 66 million people in the United States lack basic digital literacy skills.² This skills gap constitutes a second digital divide that demands solutions to ensure that the American public is prepared for global leadership positions.

[para 5] Two major federal initiatives, the National Broadband Plan (NBP), released in 2010, and the Broadband Technology Opportunities Program (BTOP), initiated in 2009, focused national attention on digital inclusion and spurred government agencies to develop policies and programs to expand broadband access and adoption.³ The NBP noted that "absent action, the individual and societal costs of digital exclusion would continue to grow." The concept of digital literacy also is threaded throughout the Common Core State Standards Initiative for K-12 schools now adopted by 45 states.⁴

[para 6] America's libraries and librarians are on the front lines of these digital literacy and digital inclusion efforts nationwide. There are approximately 17,000 public libraries buildings, 99,000 K-12 school libraries, and 3,800 college and university libraries in the United States.⁵ These libraries are staffed by approximately 150,000 librarians and provide access to technology resources and services, as well as robust and relevant collections of electronic and print materials. By supporting contextual digital literacy training (i.e., tying formal classes to directly relevant purposes such as learning to use office software to write a resume, which is then attached in an email and sent to a job board found through a guided Internet search), librarians encourage and support skills-building, as well as provide opportunities to practice these skills.

[para 7] [[sidebar: Broadbandexpress@yourlibrary, New York State Library's BTOP project, created new public computing centers (PCCs) in libraries across the state, as well as five mobile labs bringing broadband to remote areas of the state. One lesson quickly learned is that digital literacy skills are best taught in a context that engages the learners and provides them with an immediate positive outcome. In one BTOP library, for example, librarians have created classes on Internet search based on planning for a family trip. Participants must research the destination, compare travel costs and options, and other components necessary for a trip. At the end of the class, participants have practiced searching websites, evaluating the information they find, and documenting the information in a written format. Other libraries have shared that they offer Internet basics taught through searching for and "clipping" coupons. Librarians report that these classes provide learners with transferrable skills in a personally relevant framework.]]

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[para 8] Our nation's libraries reach and serve individuals of all ages, income levels, and ethnicities. Libraries serve as information hubs, conveners, and collaborators within their educational and community contexts. Today's librarians provide venues in which patrons and students can engage with, discuss, share, mash up, and create information – and go far beyond locating current research and materials. They take the holistic approach with the patrons' with which they interact – from understanding a patron or student's search need; to finding resources and tools that fit the needs, abilities, and preferences of the user. Librarians work in partnership and collaboration with educators across the preschool to higher education continuum and in the public realm in wide-ranging and significant ways to provide digital literacy instruction to our communities.

DIGITAL LITERACY IN THE CURRENT PUBLIC POLICY CONTEXT

[para 9] Twenty-first century digital literacy skills are basic to classroom performance and workforce readiness, as well as full participation in civic life. More than 80 percent of Fortune 500 companies post their job openings online only – and require online applications. Fifty percent of today's jobs require some technology skills – and this percentage is expected to grow to 77 percent in the next decade. Additionally, civic and political participation increase with online activity. For example, individuals who use social media for such activity are 96 percent more likely to participate in offline civic activities and 67 percent more likely to contact public officials.⁶

[para 10] A scan of policy documents, library resources, scholarly articles, blogs, and funding initiatives identified three main policy 'conversations' taking place around digital literacy. These central themes include how digital literacy relates to digital inclusion, education, and the workforce.

Digital skills gap perpetuates digital divide

[para 11] From the perspective of highly connected, digitally literate individuals, adding digital components to everyday tasks – such as moving government forms or job applications online – can seem like an easy and efficient way to improve traditional paper-based bureaucratic processes. Yet, for the more than one-third of the United States population without regular Internet access or basic digital literacy skills, this is often an overwhelming challenge. In fact, lack of digital literacy skills is a leading barrier to adopting broadband service at home.⁷

[para 12] Not surprisingly, the percentage of individuals without a home Internet connection is highest for populations living in traditionally underserved urban and rural communities. These individuals may be further challenged by lower incomes, less formal education, and other barriers to accessing digital technologies. *Digital Differences*, a 2012 report from the Pew Internet & American Life Project, explains that, "Senior citizens, those who prefer to take our surveys in Spanish rather than English, adults with less than a high school education, and those living in households earning less than \$30,000 per year are the least likely adults to have Internet access."⁸ Furthermore, of adults living with disabilities 54 percent (compared to 81 percent of adults not living with disabilities) report being online.⁹ Similar challenges are applicable to

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school-age children, as well. With many schools shifting to online-based courseware and Internet-based textbooks, this lack of home access has a potentially detrimental effect on the educational attainment of lower-income children who do not have Internet at home. Additionally, such children may be unable to complete assignments requiring Internet resources, access online homework assistance, or participate in online cooperative educational activities.

[para 13] From a policy perspective, the digital inclusion discourse has evolved in three basic stages since the mid-1990s:

1. recognition of the need to make access to information and communications technologies (ICTs) available for all;
2. recognition of the need for the development of basic technical skills related to ICTs; and
3. recognition of the need for development of higher-level cognitive skills related to ICTs.¹⁰

[para 14] These stages influence the current perspective on how to ameliorate the societal costs of digital exclusion and help to focus policies on tangible outcomes. A 2011 study found that how the issue is framed – e.g. is the digital divide, where people are disadvantaged socially and economically because of lack of access and ability to use digital technologies, primarily a result of a lack of access to technology or differences in skills needed to make use of that technology – influences who is perceived as responsible for addressing the related issues.¹¹ Framing the issue in terms of access to technology leads to assumptions that government and corporations should address it, while framing the issue in terms of digital literacy suggests that schools, libraries, and individuals are responsible.

[para 15] Interestingly, during the 2008 U.S. presidential campaign, the Democratic and Republican candidates used both frames (access and skills) to discuss digital inclusion.¹² This discourse indicates that across the political spectrum access *and* skills have arrived on the policy agenda. From a policy position, this change to a comprehensive approach to addressing the causes and impacts of lacking digital literacy skills is critical. If the obstacles to supporting a digitally literate society are to be overcome, access and the skills to benefit from such access must occur in tandem. In fact, in *Digital and Media Literacy: A Plan of Action*, Renee Hobbs cautions against conflating “access to technology with the skillful use of it.”¹³ Hobbs warns that educators and decision-makers often equate having a set of technology-based tools at hand is the same as providing students and the public with digital literacy curriculum and training. “Generally, neither children nor adults acquire critical thinking skills about mass media, popular culture or digital media just by using technology tools themselves... One thing is certain: simply buying computers for schools [and libraries] does not necessarily lead to digital and media literacy education.”¹⁴

[para 16] With renewed interest in digital inclusion as a necessary part of closing the broadband adoption gap, the National Broadband Plan called on the Institute of Museum and Library Services (IMLS) to develop guidelines for public access technology in order to encourage use of broadband technologies. IMLS, together with the University of Washington and the International City/County Management Association, consulted with hundreds of community members and

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experts to identify action steps and a framework for building digital communities. The result is *Building Digital Communities: A Framework for Action*, published in March 2012.¹⁵ The report specifically defines digital inclusion in communities to mean:

- All members understand the benefits of advanced information and communication technologies.
- All members have equitable and affordable access to high-speed Internet-connected devices and online content.
- All members can take advantage of the educational, economic, and social opportunities available through these technologies.

Digital literacy makes up one of seven foundational principles in the framework that “comprise the basic requirements for creating a digitally inclusive community.”¹⁶

[para 17] Both the FCC and the Department of Commerce’s National Telecommunications and Information Administration (NTIA) also initiated efforts in 2011 to support digital literacy.¹⁷ In collaboration with ten other federal agencies, NTIA brought together workforce development resources, curriculum, tutorials, and train-the-trainers materials through the online portal DigitalLiteracy.gov to provide trainers in libraries and other community-based organizations with resources and a community of practice to support those engaged in local digital literacy efforts. A secondary function of the portal is to provide an online resource for self-paced training for individual learners. NTIA has invited organizations including ALA and its divisions to contribute and rate content to continually improve the portal.

[para 18] In October 2011, the FCC kicked off a public-private partnership branded “Connect2Compete.”¹⁸ The initiative brings together low-cost computers and Internet access, micro-credit, educational and workforce related digital content and digital literacy resources. Families with at least one school-age child enrolled for free lunch through the National School Lunch Program are eligible to apply for low-cost hardware and connectivity as a first step to helping families realize opportunities made possible through access to broadband and digital literacy skills training.

Beyond the basics: digital literacy in education

[para19] While public libraries provide lifelong opportunities for on-demand instruction or extracurricular learning, advanced digital literacy skills – from research to project creation to creative expression – are an emerging and increasingly important instructional focus in formal teaching and learning settings. This occurs in K-12 classrooms and after-school centers, colleges and universities, and libraries of all kinds, in support of a wide range of curriculum.

[para 20] Since the early 1980s and the release of UNESCO’s Grünwald Declaration on Media Education, there has been an ongoing dialogue about the role of ICTs in education.¹⁹ UNESCO continues to develop international guidelines and tools in this space, including the 2011 release of media and information literacy curriculum.²⁰ This discussion, though clearly related to the libraries that serve K-12 and higher education, also is pertinent to public libraries, which have

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played longstanding roles in adult education and lifelong learning. The UNESCO Paris Agenda 2007, developed by a multi-stakeholder summit, has 12 recommendations for media education. Though focused on K-12 education, the initiative was intended to “mobilize all stakeholders.” Recommendations 6 through 8 are a call to action to bring together the diverse community of experts that have a stake in ensuring access to quality, engaging, and culturally relevant media [and information] literacy curricula, training, and assessment. Additionally the 2007 initiative emphasized the importance of adopting an inclusive definition of media education.

[para 21] Reaffirming the Grunwald Declaration, the 2007 Paris Agenda states, “More than ever citizens need to have a critical analysis of information whatever the symbolic system used (image, sound, text), to produce content by themselves and to adapt themselves to professional and social change. All the stakeholders must be involved in media education.” In a forward move the initiative also “redirected its strategy to treat Media and Information Literacy as a composite concept, in this way associating civic engagement and lifelong learning with being information literate.”²¹ ALA’s Digital Literacy Task Force also recognized the importance of an inclusive definition so that as stakeholders develop strategies to address gaps and form policies, we are assured that the resulting efforts address the most critical issues and that diverse stakeholder groups are aligning efforts.

[para 22] In the K-12 educational context, media and digital literacy have been linked to the development of standards and assessments, such as the Framework of the Partnership for 21st Century Learning, National Educational Technology Standards from the International Society for Technology in Education (ISTE) and, more recently, the Common Core State Standards Initiative.²² Digital literacy efforts in schools also have been spurred by legislation. For example, the No Child Left Behind Act (2001) and the related Enhancing Education Through Technology Act stipulate that all children must be technologically literate by the end of grade 8, putting an increased emphasis on digital literacy in schools.²³ Significantly, this requirement is tied to a concern about the digital divide (and thus interlinked with communications policy), namely that children from households that are not online are less likely to become digitally literate at home.

[para 23] The American Association of School Librarians (AASL) has undertaken the task of aligning their Standards for the 21st Century Learner with Common Core standards related to English Language Arts, Reading Standards for Literacy and Writing Standards for Literacy.²⁴ Similarly, the Association for College and Research Libraries (ACRL) has developed Information Literacy Competency Standards for Higher Education.²⁵ These efforts support in-service librarians by providing context and guidance for the educational programs they provide to students.

[para 24] The overlap and interconnections between digital literacy and critical thinking are most felt by libraries within and outside of educational institutions. Relating these concepts to formal educational settings, Barbara Jones and Suzanne Flannigan succinctly wrote: “Using the same skills used for centuries—analysis, synthesis, and evaluation—we must look at digital literacy as another realm within which to apply elements of critical thinking.”²⁶ Jones and Flannigan called this “connecting the digital dots” – building from reading and writing to new literacies that

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address the “accelerated, media-saturated, and automated” environment of the 21st century. Libraries are especially adept at not only teaching patrons the skills they need to solve immediate problems, but they also help individuals develop the ability to transfer skills and build on them so they are better prepared for future changes in technology.

[para 25] In many schools, today’s librarians are key to creating opportunities for teachers’ meaningful use of technology, as well as increasing teachers’ capacity for integrating the use of technology tools in specific learning tasks and curriculum. Many librarians are integral in creating digital media and content for both student and teacher use in and out of the classroom and school building. Forty-six percent of librarians are regularly training teachers on how to not only find high quality digital resources online but how to evaluate the quality of those resources, and 44 percent have created a library portal of resources for teacher use.²⁷

[para 26] Public and private funders also are addressing digital literacy from an educational perspective. IMLS and the John D. and Catherine T. MacArthur Foundation have developed pilot projects and promising practices in after-school settings. Through its Digital Media and Learning initiative, MacArthur seeks to “determine how digital media are changing the way young people learn, play, socialize and participate in civic life.” The Foundation is funding researchers to investigate this question, as well as to develop digital learning spaces in public libraries and other out-of school spaces.²⁸ This includes up to \$100,000 allocated for the development of learning labs in museums and libraries across the United States.²⁹

[para 27] Participatory learning, collaboration and content creation continue to push the boundaries of digital literacy as social media and other interactive online platforms become more mainstream and essential in daily life. Additionally, the Bill & Melinda Gates Foundation and the MacArthur Foundation have funded a three-year project that will create video games to engage students in learning and measure their success.³⁰ “Learning is changing and so must educational institutions in order to engage kids and ensure they are taught the participatory and creative skills that are needed to succeed in the 21st century,” said Connie Yowell, Director of Education at the MacArthur Foundation.³¹

Creating a competitive workforce

[para 28] Workforce and economic development demand a digitally literate workforce. In fall 2011, FCC Chairman Julius Genachowski framed a new digital literacy and broadband adoption effort within the contexts of education and employment. He stated, “We need to ensure that all of our population has at least those skills required for participation in our digital economy. The data confirms the existence of this skills mismatch. In twelve large metropolitan areas, the ratio of job postings to unemployed people is one to one. These jobs aren’t getting filled because too many job seekers don’t have the right skills. The skills gap is a national problem that has left businesses without a crucial supply of skilled workers and left many Americans without the right skills to land the jobs of the 21st century.”³² Twenty-first century digital literacy skills are basic to workforce readiness. Genachowski also stated, “More than 80 percent of Fortune 500 companies post their job openings online only – and require online applications. [F]ifty percent

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of today's jobs require technology skills – and this percentage is expected to grow to 77 percent in the next decade.³³ Library experiences bear this out.

[para 29] Thirty million library users report going to the library for employment-related activities in a twelve-month period.³⁴ Of these 30 million, 76 percent searched for jobs and of these 68 percent applied for a job or submit a resume, 33 percent secured an interview, and from there about 16 percent were eventually hired.³⁵ Forty-six percent went to the library to work on resumes using the public access computers. Moreover, 64.1 percent of public libraries say that providing services to job seekers is the most important service they offer to communities, while providing information for economic development (e.g., starting a business, seeking business opportunities) is regarded as the most highly valued service by 30 percent of public libraries.³⁶

[para 30] This vital role of public libraries in connecting community members with needed resources and information was formally acknowledged in 2010 with a Training and Employment Notice from the Department of Labor to local workforce agencies, which encouraged them to partner with public libraries to extend their career and employment services to job seekers and unemployed workers.³⁷ Among the highlighted benefits One-Stops receive from this partnership are longer library hours (beyond One-Stop office hours), better and more technological access and assistance, and the fact that parents can work on their job search while children are engaged in productive activities.

[para 31] The digital literacy skills that school and academic libraries help students develop can be expected to impact their ability to find jobs and their success in the workplace. Digital literacy skills will help students conduct effective job searches and prepare digital application materials, as well as perform on the job. Meanwhile, adults, who for a variety of reasons have not mastered – or need to brush up on – digital skills for work-related reasons, have the opportunity do so at libraries through formal classes, informal coaching and learning, or family literacy programs that include traditional literacy as a critical step toward mastery of digital literacy skills.

[para 32] Libraries can capitalize on the current interest in digital literacy and at the same time educate stakeholders as to the broader concepts involved in becoming digitally literate for the long-term. In this way, any initiative has the desired sustainable impact instead of falling short when funding dries up or a new initiative takes its place. Today's public policy emphasis is on workforce development and economic competitiveness; even if the public policy focus changes, librarians will continue our long tradition of helping individuals master the necessary literacies to become active participants in society.

LIBRARIES ON A CONTINUUM

[para 33] A person may be supported by a variety of libraries and librarians throughout her life in terms of developing and maintaining digital literacy skills. Here's an example of what this might look like:

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[para 34] *Meet “Grace.” From birth, her parents have made weekly visits to the public library. She starts with board books and picture books, but soon becomes interested in the games in the children's computing area, where she learns letters and numbers. At the library, Grace meets Dominic, whose grandmother started bringing him to lapsit story hour after having learned about library programs for infants from nurses at the county clinic. His grandmother is now thinking about taking a library class online in scrapbooking while he goes to the preschool story hour. Mai, who comes to the library after school, is in kindergarten and proudly talks to other children using the library's computers about what she does in school. Mai's school-based digital literacy learning journey includes clicking, dragging and opening files and web browsers. While Mai is at school, her father visits the library to use the business-related databases and attends a class to hone his computer office skills; her mother, a paralegal, regularly accesses legal records online via the portal established by the law firm's librarian.*

[para 35] *As Grace's, Dominic's, and Mai's reading skills develop, the classroom teachers and school librarians introduce research concepts, sharing age-appropriate resources that help them search online, use online multimedia, and share research findings via a class wiki. With guidance from the team of her creative writing teacher and the school librarian, Grace creates an online creative writing community where teens post stories, poetry, and upload artwork. She adds a Twitter feed and gets friends to promote her space with her hashtag.*

[para 36] *In high school, Dominic joins the TV broadcast club in the school library, and, Dominic learns about a volunteer opportunity working with the local Boys and Girls club to capture family histories in short audio podcasts. He works with a young boy to get his abuelito to do an interview with him about growing up on the Texas-Mexico border. Dominic uses this experience for his college essay that he writes and submits online at the public library.*

[para 37] *After school, Mai brings her laptop to use with the public library's wifi to do her homework and access interactive online tutoring. Her public librarian introduces her to the Library of Congress' Veterans History Project, which provides primary source testimony for her Vietnam War unit in U.S. History.*

[para 38] *Grace continues on to college, where she learns from academic librarians how to use increasingly complex databases and data sets and how to synthesize, organize, and share her findings. As a higher education student who needs work experience, she volunteers her time at the local public library as a digital literacy coach, helping teens create an online radio show.*

[para 39] *A few years out of college, as Dominic's decides to start an online community news blog created by and for young people. He plans to make it available in both Spanish and English. He enrolls in classes at the public library to learn how to use online databases for help with grant writing and using social media to build support from local businesses and philanthropic foundations. As Mai begins a family, her children regularly visit the public library -- both the physical and virtual branches, where YouTube-based storytimes are a popular family activity.*

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[para 40] Taken as a whole, one can see how libraries of different types may play a role throughout a person's life in an ongoing development of digital literacy skills.

[para 41] To strengthen this continuum for the library patron, different library types can identify gaps or overlaps in services offered by a particular library type. We might consider the ways that school, academic and public libraries work together, providing different types of “digital literacy links” that build off of one another over the course of an individual's lifetime. Librarians can share successful practices across library type and enhance the repertoire of colleagues in different settings – the result of which is to provide more robust and comprehensive services to the patron wherever he or she is on the continuum.

[para 42] The next section of this report looks more closely at the work underway in our K-12, higher-education and public libraries, including some key issues and opportunities.

School Libraries

School librarians: central to student learning

[para 43] School libraries always have been interdisciplinary spaces that are deeply connected to the curriculum; instrumental in developing student research and information literacy skills; and committed to creating an environment of free reading that supports lifelong learning and curiosity. These traditional roles and strengths become more critical in a time of a digital information deluge and where the lines between content user and content creator are blurred and even actively deconstructed.

[para 44] With more mobile technology and dispersed information sources, the library and librarian are less limited to a single physical space, and must be more embedded across classrooms and through student social networks that greatly enable learning outside of the walls of classrooms. In a “connected” educational environment, there is significant opportunity for partnering with teachers in curriculum development, lesson planning and inquiry-based learning that is interactive and iterative. Moreover, collaboration and sharing enables interesting re-uses and partnerships—for instance, a library module/site on Shakespeare developed for an English class might be re-purposed for world history or theater classes/activities.

[para 45] Technology provides important opportunities for school librarians to contribute to the mission of a school. Using standards-based techniques, a collaborative teaching environment enriched through creative integration of technology tools takes learning beyond standardized tests and enables learning that embraces digital spaces, content and resources and emphasizes the process of learning as equally as important as an end product. Increasing focus on technology-enabled participatory learning also leverages the orientation of today's and tomorrow's students for whom a digital environment is expected.

School libraries at the cutting-edge

[para 46] There are many examples of digitally innovative school libraries, such as those recognized with the National School Library Media Program of the Year award. In 2011,

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Henrico County (Va.) Public Schools was recognized, in part for its collaboration around Henrico21. School librarians partnered with instructional technology resource teachers, administrators and other school leaders to develop a rubric that focuses on the goals of student-driven inquiry, research, creativity, sharing, and student growth. “Our school librarians are a critical component of Henrico21,” wrote Patrick Russo, superintendent of schools. “Together with the staff at each school, school librarians serve as powerful leaders who are responsive to the needs of the learning community.”³⁸

[para 47] The New Canaan High School Library in Connecticut, recently recognized for its innovative integration of technology into its curriculum, exemplifies several key traits of a rich school library program where digital literacy skills are taught seamlessly.³⁹ The library’s Participatory Platforms for Learning program strives to cultivate curiosity throughout the learning community and to encourage experimentation with new tools for content creation, publication and participation. The program includes deploying the full complement of Google applications; advocating a culture of intellectual freedom; using Twitter for current events research; and using Facebook groups for students to record their research process and provide feedback to others in the group. The program meshes learning and the “real world” to teach students digital citizenship by encouraging them to become responsible information consumers, creators and contributors in the public domain.

[para 48] In one example of this work, when juniors begin researching one of their two research papers (English and social studies), they join a Facebook group. They are asked to record their research process starting with basic information like topic, keywords and sources, but they also help one another by providing ongoing feedback to other group members. This contribution piece is a departure for learners; a rubric was created to help them better understand the criteria for successful participation, including indicators like collaboration, continuity and growth.⁴⁰

[para 49] “The Unquiet Library” at the Creekview High School Media Center in Canton, Georgia, offers more examples. In the fall of 2009 and spring of 2010, a single class of 10th grade English students explored the uses of social media and cloud computing for communication and educational purposes, learned to identify and utilize authoritative information sources, and cultivated presentation styles designed to engage a 21st century, technology-savvy audience. Students participated in “literature circles” and contributed to blogs and wikis to share their subsequent reactions, reflections and research on the semesters’ subject content—issues in Africa and issues facing American military veterans. While the class structure included traditional educational assignments like a research paper, students were encouraged to seek out and utilize tools in collaborative learning like Netvibes information portals, learning dashboards, and Evernote social bookmarking.

[para 50] Students learned they have the option to take personal responsibility for their education in new and exciting ways. “[M]y learning environment is the world,” noted one student in the course evaluation. “I have nearly everything I could possibly want or need at my fingertips.” Another student praised the course subject matter, as well as its unique integration with cutting-

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edge technologies: “I actually learned about issues in the world, and I discovered a new way to learn that will definitely benefit me in the long run as technology continues to advance.”⁴¹

Evidence-based and accountable

[para 51] Numerous studies have shown that the presence a library and librarians in K-12 schools, in general, correlate with better student performance, including meeting educational standards. The International Association of School Librarianship prepared a list of resources that answer the question, “Do school libraries make a difference?”⁴² Because U.S. schools are under increasing pressure to meet standards, demonstrating the school library role in supporting student achievement has been an ongoing advocacy strategy. For example, in relation to digital literacy, the No Child Left Behind Act (NCLB) and the related Enhancing Education Through Technology Act (EETT), as mentioned above, are relevant. They stipulate that all children must be technology-literate by the end of grade eight. As AASL points out, “students from less affluent families are much less likely to have home access to computers and the Internet,” and school libraries can help especially students from these backgrounds to meet the NCLB digital literacy requirement.”⁴³

[para 52] The AASL also describes the role that school libraries have as building-level professional development leaders who increase the digital and information literacy capacities of other educators. This role has grown in importance as teachers report that they need help keeping up with the pressure to integrate technology into the classroom. In order to ensure school librarians are prepared for this role, AASL created the Standards for Initial Preparation of School Librarians, which are approved by Specialty Areas Studies Board of the National Accreditation of Teacher Education. Standard 1.3, which focuses on the school librarian as an instructional partner: “Candidates model, share, and promote effective principles of teaching and learning as collaborative partners with other educators. Candidates acknowledge the importance of participating in curriculum development, of engaging in school improvement processes, and of offering professional development to other educators as it relates to library and information use.”⁴⁴

[para 53] Two-thirds of librarians (67 percent) regularly participate in professional learning communities with their teachers. They also support teachers’ use of technology in many ways, including creating collections of appropriate online resources for teachers to use in the classroom (65 percent), locating digital content such as videos, animations and podcasts to support instruction (51 percent) and evaluating software for classroom use (40 percent).⁴⁵

Academic Libraries

Academic Libraries: digital literacy through information literacy

[para 54] Academic and school libraries share some similarities in terms of the way that teachers and professors mediate the library role in contributing to student digital literacy. That is, the degree to which students take advantage of library resources – and the digital literacy skills that they can gain by working with librarians – is influenced by the extent that their official coursework or classroom time provides a link. Although academic libraries are more focused on

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information literacy than digital literacy, these two 21st century literacies are closely linked as information literacy requires digital literacy to access appropriate online research sources, and information literacy gives further context to the evaluation skills developed by digital literacy. *The Information Literacy Competency Standards for Higher Education* from the Association of College and Research Libraries (ACRL) are often cited as a key guidepost.⁴⁶ Furthermore, what students learn in or about the library is only one aspect of scholarly research, and there are many other skills and research methods that students learn to use outside of it – thus, the development of information literacy happens partly inside the library, but also outside of it. Digital and information literacy are both necessary in academic settings.

Collaborative partnerships

[para 55] Information literacy initiatives are often a campus-wide effort. Librarians partner with professors, student affairs professionals, and media services, among other departments, to further advance both the library and campus missions. Yet, despite the potential academic libraries have to contribute to information literacy, perhaps the biggest challenge for academic librarians is that college students do not make nearly as much use of librarian expertise as they could. A five-campus, two-year ethnographic study investigating how students perceive and use their campus libraries revealed that, “students rarely ask librarians for help, even when they need it.”(42) The findings detail just how low student digital literacy often is, and ways to foster better connections between students and librarians, including creating stronger partnerships between professors and the library and being pragmatic (rather than idealist) about what information skills students need for the workplace. In the face of these findings, librarians are striving to work closely with university administrations and professors to integrate information literacy skills into the student learning process. For example, at the University of Tennessee in Chattanooga librarians helped to write the basic English curriculum, making sure that the standard course, reaching 78 percent of freshmen, aligned with ACRL information literacy standards. In short, “students simply cannot pass either semester of freshman composition without meeting a certain minimal threshold of information literacy in accordance with ACRL standards 1 through 4.”(43)

Activity level in the field

[para 56] From face-to-face and web-based instructional offerings to carefully crafted pathfinders and guides, instructional efforts at academic libraries take many forms; institutions have appointments devoted to instruction and information literacy and each year ACRL's Institute for Information Literacy Immersion Programs trains academic librarians on information literacy development, delivery, assessment, and management.(44) Today's information literacy efforts reflect an extensive level of activity in the field. For example, in a recent *Trends in Academic Libraries* report prepared by ALA, “nearly half (46.6 percent) of all academic libraries reporting had a definition for information literacy or an information literate student, increasing about 18.2 percent in 2008 from 2004.” Additionally, “about one-third (32.9 percent) of all academic libraries reported having incorporated information literacy into their institutional missions, an increase of 13 percent in 2008 from 2004.” There is also growth in the overall number of instruction sessions as well as the number of learners reached by instruction.

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[para 57] In addition to course-integrated offerings and guides, some institutions also offer for-credit information literacy courses. Iowa State University's Library 160 course is by far one of the oldest information literacy courses in the United States. In its nearly 100-year history, the course has undergone many curriculum transformations, from an introductory library session to now shaping its core outcomes from ACRL's Information Literacy Competency Standards for Higher Education. The required one-credit hour course is structured with readings and quizzes that cover information needs, web resources and evaluation, library resources, scholarly and popular articles, how to work in the library's databases, and academic integrity and plagiarism, all in an effort to prepare students for future academic success and set the stage for lifelong learning habits.

[para 58] In today's digital environment, social responsibility with information use is more important than ever. Librarians instruct students in proper citation techniques and ethical retrieval methods. As the 2011 FCC report mentioned above noted, nearly all jobs today require a computer and digital literacy skill set, and most of the job application processes have moved online. Librarians help college students hone the critical and problem solving skills to survive and thrive in a digital world.

The academic librarian's toolkit

[para 59] Ever investigating modes of delivery and interactive instructional methods, academic librarians are true innovators in the classroom. Today's classroom environment calls librarians to meet students where they are – and that might be beyond library walls. Librarians work to embed tools such as chat widgets into library databases and use multimedia guides such as LibGuides to enhance instruction sessions and assignments. Additionally, librarians create online tutorials and instructional videos, use learning management systems, and craft interactive, homegrown games for students to explore information literacy concepts. By working with Web 2.0 technologies, librarians encourage students to gain confidence exploring new technologies all while making the learning experience as dynamic and engaging as possible.

Information Literacy Assessment Initiatives

[para 60] There is an extensive body of literature focused on information literacy that, among many aspects, explores how people experience and respond to the changing digital world. The University of Washington Information School's ongoing research project, Project Information Literacy, is just one systematic and concentrated effort to document the state of undergraduate student information literacy competency across the United States and across all institution types including public and private universities and colleges and community colleges.⁴⁷

[para 61] Many academic libraries today, in line with campus initiatives, also have adopted a culture of assessment to assess impact on student learning and effectiveness of instruction. Standardized testing options are available to evaluate instruction programs and measure the information literacy abilities of students. SAILS (Standardized Assessment of Information Literacy Skills) and the iSkills Assessment from Educational Testing Service are two tools used in academic libraries. Additionally, libraries may also use a self-reporting assessment tool like LibQUAL+ in order to collect both quantitative and qualitative data concerning instruction

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programs and information literacy efforts. These evaluations make it possible for librarians to remain responsive to user needs and respond confidently with data that supports the impact of the library on students' information literacy development to campus administrators and legislators.

Public Libraries

On the front lines of digital inclusion and life-long learning

[para 62] Public libraries offer resources, technology, and services to people of all ages and abilities across the country, many of whom may not have the Internet at home, or who need assistance using it. In fact, 99 percent of public libraries offer public Internet access, and more than 90 percent report providing digital literacy services such as formal technology classes, online tutorials, and one-on-one help.⁴⁸ Besides providing technology access and general training, public librarians also help children, adults, and senior citizens with topic-specific tasks that increasingly require digital literacy – such as applying for jobs, accessing government resources, and completing school assignments.

[para 63] More broadly, public libraries are often the introductory point for what becomes lifelong literacy – from lap-sit and storytime programs to first reading experiences – as well as the place where many adult learners turn to build their literacy skills. In 2003, the National Assessment of Adult Literacy (NAAL) found that 90 million American adults (16 years or older) read at basic or below basic levels. These adults lack the literacy skills necessary to read and comprehend the information in complex documents. These traditional literacies – developed, encouraged and supported by public libraries – are necessary to support meaningful engagement with online information, as well. Recognizing the signs of people with literacy issues (digital or otherwise) can help libraries tailor targeted instruction.

[para 64] Over the past several years, public libraries have documented increased demand for technology access and digital literacy instruction. For instance, a 2012 report found that 60 percent of libraries reported increased use of their public access computers and wireless networks. A majority of libraries also reported increased or level use of computer training classes.⁴⁹ In 2009, 52 million people got help using computers from a librarian or library volunteer; 16 million participated in library computer classes.⁵⁰

[para 65] While it is certainly an economic benefit that individuals across the United States can get support with technological tasks and build digital skills at public libraries, this creates a demand for increased library staff and infrastructure. The demand for Internet access and digital task-related assistance is evidenced by lines for computer access, requiring time limits on computer usage, stressed network infrastructure, and library staff challenged with ever increasing requests for sophisticated technological help. Downturns in the economy and associated cuts in funding, staffing, and hours have made providing a range of digital services challenging for most institutions.

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[para 66] As businesses, government offices, and schools move services online, the responsibility to provide access to these online services often falls to the public libraries, and digital literacy (or the lack of it) is one of the increased “costs” libraries bear.⁵¹ There is some recognition of this problem on the federal level. In the NBP, the FCC states:

“As government services increasingly go online, libraries shoulder responsibility for helping people learn how to use these online services,” and recommends the creation of guidelines to assist federal agencies in developing e-government services that, “take into account the role of public libraries and CBOs [community based organizations] as delivery points.”⁵²

[para 67] This scenario begs the question: If government, corporations, schools, etc. are, in part, creating issues by moving services online, do they have some responsibility to provide resources to help people get online, or support the agencies, such as public libraries, that assist individuals in gaining the resources and skills to do so? What are the social and economic costs of ignoring this situation? A study sponsored by the U.K. government suggests that there is a strong economic case for digital inclusion. That is, when people are left offline because of access, skills, usability or other issues, they suffer economically. This study estimates the total potential economic benefit from getting everyone in the U.K. online is in excess of £22 billion.⁽³⁰⁾ If public libraries are critical front-line points of access and digital literacy training, could investments in them – so that they can provide truly adequate digital services and assistance, increase digital and economic inclusion?

Identifying opportunity

[para 68] Public libraries, often through the leadership of state library agencies, are creating new opportunities to support digital literacy spurred by the American Recovery and Reinvestment Act (ARRA). The resulting BTOP projects have initiated new community partnerships for library grant recipients as well as for libraries included as partners in other BTOP projects.⁵³ Many library projects are centered on workforce development and include a digital literacy component in the form of online job search and application workshops, professional email etiquette, and computer office applications.

[para 69] [[sidebar: “NJ Works” is a statewide project that was made possible by a federal BTOP grant for Public Computing Centers. Although the New Jersey State Library handled the increased broadband access, additional computers and online electronic resources on our own, when it came to training partnerships really paid off!

Our grant called for 80 training sessions for staff and 800 training sessions for the public on how to use technology to write resumes, search online resources and fill out job applications. The State Library partnered with the New Jersey Council of County Colleges on this massive endeavor. This group was a perfect fit with our project, as their campuses are located throughout the state so trainers did not have to travel long distances for the training sessions. Also, their instructors are already trainers so did not need this additional skill set before starting the classes. The Council also had done training in the past for the Department of Labor and Workforce Development so they were keenly aware of the need to keep outputs and, when possible,

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outcomes from their training. Finally, one of their trainers who also is a librarian, wrote a model training module that all trainers were able to use, ensuring parity of training statewide.

Prior to the official grant, the State Library also partnered with the New Jersey Department of Labor and Workforce Development and the New Jersey Library Association to hold classes in libraries across the state for library staff to enable them to assist library customers with filing out online unemployment applications. With no more than two One Stop Centers per county in New Jersey this greatly relieved the backlog of applications the Department was dealing with.

Along with “NJ Works” the State Library has recently launched “NJ Grows Biz”, digital literacy for small businesses and entrepreneurs. The State Library has licensed databases that are complementary to the information being offered by our state’s Business Action Center and Small Business Development Centers and a business outreach specialist travels throughout the state bringing awareness of these resources to every community.⁵⁴

[para 70] Though BTOP represents a significant infusion of resources for public libraries, other libraries have developed programs through community partnerships and other funding sources. For example, in St. Paul, Minnesota, the public library branches offer formal training including basic digital literacy, job search, and micro business development. Formal classes are supplemented with a variety of one-on-one support including open computer lab sessions staffed by a librarian; walk-in computer help staffed by a technology education volunteer, computer classes for older adults in partnership with the Community Education Senior Program, adult learning labs for job skills, classes for teens run by a “teen tech crew,” and computer basics practice groups for patrons needing extra time to practice. In another example, the St. Paul library system hires native speakers in one of six languages – Hmong, Spanish, Karen, Somali, and two Ethiopian dialects – to provide computer training through a “mobile workplace.” The trainers receive a small stipend and spend about ten hours per week total bringing training to community centers where the different populations already are engaged in activities. The mobile workplace consists of a car with ten laptops. The library reports that these on-site sessions are fully subscribed and that with additional funds could easily be increased and filled.⁵⁵

[para 71] Public libraries also are reimagining services and space as evidenced by the growing number of libraries engaged in creating programs modeled on digital learning labs like Chicago Public Library’s YOUmedia. The YOUmedia Network has created a toolkit that provides information and resources for libraries and other entities to explore options in creating their own interactive, connected learning spaces: <http://www.youmedia.org/toolkit>.

[para72] Libraries also are reaching beyond their own walls to extend further into the broader community. The Philadelphia Free Library is building on its initial BTOP investment from the Freedom Rings Partnership, to create “HOTSPOTS” with additional funding from the John S. and James L. Knight Foundation.⁵⁶ These wired spots are located throughout the city – including Audenried Charter High School, the Heavenly Hall Annex, and The Village of Arts and Humanities – and offer access to computers, printers, Internet access, reference materials from the Free Library, and trained staff to provided one-on-one guidance. The library also is seeking

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community partners to connect with its Techmobile, a 25-foot vehicle outfitted for digital literacy training and outreach.

SUMMARY

[para 73] Libraries of different types are influenced by similar trends, such as downturns in the economy and associated funding cuts, and the continued development of new ICTs. The report discusses in detail challenges libraries face related to digital literacy including:

- The role libraries play in digital literacy isn't always recognized and valued, even within institutions or communities in which libraries are embedded – an issue of invisibility.
- Libraries are facing budget cuts, staff cuts, and even closures, which impact their ability to support digital literacy – though the way this plays out is perhaps somewhat different based on library type.
- The profession needs to ensure that new librarians are prepared for leading digital literacy programs, and those in service are provided training to lead these program.
- Some libraries do not have enough staff, and/or staff does not have the needed subject area expertise to adequately support user digital literacy needs.

[para 74] Overall, libraries have a sizeable reach in terms of supporting – or having the potential to support – the digital literacy needs of many different populations. Libraries, situated in communities and schools, reach learners of different ages, from the very young, to elementary school, high school, college and university students, as well as adult learners and older adults. Libraries also support the digital literacy of specific groups such as job seekers, or non-English speakers.

[para 75] Libraries can capitalize on the current interest in digital literacy and at the same time educate stakeholders as to the broader concepts involved in becoming truly digitally literate over a lifetime. Helping people, no matter at what stage in life they are, develop the ability to master the current requisite technical skills while building on cognitive capacity creates learners who can adapt to current trends and will be able to negotiate future challenges. This is the long-term benefit of including the library community in national, state, or local digital inclusion initiatives.

Appendices:

Appendix A: Current DLTF Membership & Affiliations (online at http://www.ala.org/offices/sites/ala.org.offices/files/content/oitp/people/committeemembers/digital_literacy.pdf)

¹ As defined by the Institute of Museum and Library Services (IMLS) in its 2012 report, digital inclusion is “Digital inclusion is the ability of individuals and groups to access and use information and communication technologies. Digital inclusion encompasses not only access to the Internet but also the availability of hardware and software;

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relevant content and services; and training for the digital literacy skills required for effective use of information and communication technologies.” The full report is available here

<http://www.ims.gov/assets/1/AssetManager/BuildingDigitalCommunities.pdf>.

² FCC Chairman Announces Jobs-Focused Digital Literacy Partnership Between Connect2Compete and the 2,800 American Job Centers. July 23, 2012. Blogpost. Available <http://www.fcc.gov/blog/fcc-chairman-announces-jobs-focused-digital-literacy-partnership-between-connect2compete-and-28>. Accessed September 17, 2012.

³ The Federal Communications Commission (FCC) was directed by Congress in early 2009 to develop what became the National Broadband Plan (NBP) that would “ensure every American has “access to broadband capability.” Congress required that the NBP would provide “a detailed strategy for achieving affordability and maximizing use of broadband to advance “consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, employee training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes.” Read the Executive Summary <http://www.broadband.gov/plan/executive-summary/>. The section that includes digital literacy is available here <http://www.broadband.gov/plan/9-adoption-and-utilization/#s9-3>. To see ALA’s work related to the NBP or BTOP see <http://www.districtdispatch.org/?s=national+broadband+plan> and <http://www.districtdispatch.org/?s=BTOP>. Also in 2009 Congress authorized the American Recovery and Reinvestment Act (ARRA) which provided the Department of Commerce’s National Telecommunications and Information Administration (NTIA) with \$4.7 which NTIA administered through a the Broadband Technology Opportunities Program (BTOP) in the form of grants. The Department of Agriculture’s Rural Utilities Service (RUS) received \$2.5 billion for a total of \$7.2 billion allocated for programs related to building out broadband Internet and making it accessible and affordable across the country. BTOP project areas support the deployment of broadband infrastructure, enhance and expand public computing centers, encourage sustainable broadband adoption, and develop and maintain a national broadband map. Libraries were direct recipients of grant funds, primarily in the Public Computing Center category but also in the Sustainable Broadband Adoption category. Libraries were also included in a number of Infrastructure projects. For more information see <http://www2.ntia.doc.gov/about> and <http://www.broadbandusa.gov/BIPportal/index.htm>.

⁴ From the Common Core State Standards Initiative website: “Just as media and technology are integrated in school and life in the twenty-first century, skills related to media use (both critical analysis and production of media) are integrated throughout the standards.” Available <http://www.corestandards.org/about-the-standards>. Accessed September 17, 2012.

⁵ ALA Fact Sheet 1: Number of Libraries in the United States. Updated December 2011. Available <http://www.ala.org/tools/libfactsheets/alalibraryfactsheet01>. Accessed September 13, 2012.

⁶ Rainie, L. (2011). *Social Media and Civic Life*. Accessed September 13, 2012. Available: <http://pewinternet.org/Presentations/2011/Oct/NASCIO.aspx>

⁷ Horrigan, John B. *Broadband Adoption and Use in America: OBI Working Paper Series No. 1*. February 2012. Available: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296442A1.pdf. Accessed September 17, 2012.

⁸ Zickuhr, K. & Smith, A. (April, 2012). Digital Differences. PEW Internet & American Life Project. Available <http://pewinternet.org/Reports/2012/Digital-differences.aspx>. Accessed September 17, 2012.

⁹ Ibid.

¹⁰ This isn’t to say that all policy makers are now at “stage 3.” Educational Testing Services (ETS). 2007. “Digital Transformation: A Framework for ICT Literacy.” A Report of the International ICT Literacy Panel.

¹¹ <http://www.sri.cornell.edu/sri/files/EpsteinNisbetGillespie-WhoIsResponsibleForTheDigitalDivide-2011.pdf>
Accessed September 8, 2012.

¹² Ibid. p102.

¹³ Hobbs, R. (2010). Digital and Media Literacy: A plan of action. The Aspen Institute Communications and Society Program. Washington, D.C. p 29. Available http://www.knightcomm.org/wp-content/uploads/2010/12/Digital_and_Media_Literacy_A_Plan_of_Action.pdf. Accessed September 8, 2012.

¹⁴ Ibid.

¹⁵ Institute of Museum and Library Services, University of Washington, International City/ County Management Association. (2012 January). Building Digital Communities: A framework for action. Washington, DC: Institute of Museum and Library Services. Available

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http://www.ims.gov/assets/1/AssetManager/BuildingDigitalCommunities_Framework.pdf. Accessed September 17, 2012.

¹⁶Ibid. p 1.

¹⁷ The National Telecommunications and Information Administration or NTIA is part of the U.S. Department of Commerce and is an Executive Branch agency that is responsible for advising the president on telecommunications and information policy issues. NTIA's current focus is on expanding broadband Internet access and adoption across the country. View the website <http://www.ntia.doc.gov/>.

¹⁸ For more information see the official website <http://www.connect2compete.org/>.

¹⁹ UNESCO. 1982. "The Grünwald Declaration on Media Education." Retrieved September 8, 2012,

(http://www.unesco.org/education/pdf/MEDIA_E.PDF).

²⁰ http://portal.unesco.org/ci/en/ev.php-URL_ID=15886&URL_DO=DO_TOPIC&URL_SECTION=201.html.

Accessed September 8, 2012.

²¹ See http://www.diplomatie.gouv.fr/fr/IMG/pdf/Parisagendafr_en.pdf and more generally

<http://www.unesco.org/new/en/communication-and-information/media-development/media-literacy/>. Accessed September 8, 2012.

²² See <http://www.p21.org/index.php> for a discussion on the Partnership for 21st Century Skills. See

<http://www.iste.org/standards> for discussion on the ISTE standards. See <http://www.corestandards.org/> for a discussion on the Common Core State Standards Initiative. Accessed September 17, 2012.

²³ U.S. Department of Education "Enhancing Education Through Technology Act of 2001," SEC.2402. Purposes and Goals. Available <http://www2.ed.gov/policy/elsec/leg/esea02/pg34.html> . Accessed September 17, 2012.

²⁴ <http://www.ala.org/aasl/guidelinesandstandards/commoncorecrosswalk>. Accessed September 8, 2012.

²⁵ <http://www.ala.org/acrl/standards/informationliteracycompetency>. Accessed September 8, 2012.

²⁶ Jones-Kavaller, B.R. & Flannigan. S.L. (2006). Connecting the Digital Literacy Dots: Literacy of the 21st Century. *Educause Quarterly*, (v2), p9. Available: <http://net.educause.edu/ir/library/pdf/EQM0621.pdf>. Accessed September 8, 2012.

²⁷ Project Tomorrow. "Personalizing the Classroom Experience – Teachers, Librarians and Administrators Connect the Dots with Digital Learning." (May 2012) Available

http://www.tomorrow.org/speakup/pdfs/SU11_PersonalizedLearning_Educators.pdf. Accessed September 17, 2012.

²⁸ The MacArthur Foundation recognized that the impact of digital media on young people has far-reaching consequences for learning institutions and has created a Digital Media and Learning initiative that encompasses researching and raising awareness to grant making to influence and demonstrate new and successful approaches to teaching and learning. Overall the Foundation plans to shape a policy environment that supports such learning. For more information see <http://www.macfound.org/programs/learning/strategy/>. Accessed September 8, 2012.

²⁹ For more information on the libraries and museums that have received funding for the development of a learning lab see the IMLS press release announcing the awards. Available

http://www.ims.gov/national_competition_selects_12_libraries_and_museums_to_build_innovative_learning_labs_for_teen.aspx. Accessed September 8, 2012.

³⁰ <http://www.macfound.org/press/from-field/new-learning-lab-will-research-develop-games-engage-students-measure-learning/>. Accessed September 8, 2012.

³¹ http://www.macfound.org/media/article_pdfs/GLASS_LAB_PRESS_RELEASE_06_28_2012_2.pdf. Accessed September 8, 2012.

³² Remarks of FCC Chairman Julius Genachowski at event announcing a public-private partnership to address broadband adoption. October 12, 2011. Available <http://www.fcc.gov/document/chairman-genachowski-broadband-adoption>. Accessed, September 17, 2012.

³³ Remarks of FCC Chairman Julius Genachowski at Connect to Compete launch event. November 9, 2011. Available <http://www.fcc.gov/document/chairman-genachowski-remarks-broadband-adoption>.

³⁴ Becker, S. et al. (2010). *Opportunity for All: How the American Public Benefits from Internet Access at U.S. Libraries*. Institute of Museum and Library Services. Washington, D.C.

<http://www.ims.gov/assets/1/AssetManager/OpportunityForAll.pdf>. Accessed September 8, 2012.

³⁵ Ibid. p 80.

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- ³⁷ http://www.ims.gov/departments_of_labor_provides_guidance_to_workforce_agencies.aspx. Accessed September 8, 2012.
- ³⁸ Henrico County Public Schools named National School Library Program of the Year, American Libraries Magazine Press release April 29, 2011. <http://americanlibrariesmagazine.org/news/ala/henrico-county-public-schools-named-national-school-library-program-year>. Accessed September 17, 2012.
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- ⁴¹ <http://www.ala.org/offices/sites/ala.org.offices/files/content/oitp/cuttingedge/cuttingedge2011.pdf>
- ⁴² <http://www.iasl-online.org/advocacy/make-a-difference.html>. Accessed September 9, 2012.
- ⁴³ <http://www.ala.org/aasl/sites/ala.org.aasl/files/content/aaslarchive/aboutaaslarchive/aaslbucket/AASLNCLBbrochureweb.pdf>.
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- ⁴⁵ Project Tomorrow. "Personalizing the Classroom Experience: Teachers, Librarians and Administrators Connect the Dots with Digital Learning." May 2012 http://www.tomorrow.org/speakup/pdfs/SU11_PersonalizedLearning_Educators.pdf p3 Accessed September 17, 2012.
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- ⁵¹ Dharma Dailey, Amelia Bryne, Alison Powell, Joe Karaganis and Jaewon Chung, *Broadband Adoption in Low-Income Communities* (Social Science Research Council, 2010). For discussion on cost-shifting see generally p 67-70. Available http://webarchive.ssrc.org/pdfs/Broadband_Adoption_v1.1.pdf. Accessed September 17, 2012.
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