

Digital Human Capital: Developing a Framework for Understanding the Economic Impact of Digital Exclusion in Low-Income Communities

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Source: *Journal of Information Policy*, Vol. 3 (2013), pp. 247-266

Published by: Penn State University Press

Stable URL: <http://www.jstor.org/stable/10.5325/jinfopoli.3.2013.0247>

Accessed: 26-01-2017 21:25 UTC

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# DIGITAL HUMAN CAPITAL: DEVELOPING A FRAMEWORK FOR UNDERSTANDING THE ECONOMIC IMPACT OF DIGITAL EXCLUSION IN LOW-INCOME COMMUNITIES

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Are universal access and computer literacy the keys to ending the digital divide? No, argue Bach, Shaffer and Wolfson. Socio-economic inequality and social exclusion demand a more aggressive and nuanced plan to address this problem. They argue for a Digital Human Capital framework, taking into account the complex nature of social exclusion in the informational age. Based on a year of qualitative research on BTOP programs in Philadelphia aimed at closing the digital divide, the authors conclude that ICT training initiatives must shift toward critical social and cultural practices that encourage full participation in community affairs, cultural life, and official institutions. Policymakers must design digital inclusion initiatives that ultimately lead to diversity in media ownership, expand digital literacy, and teach participants to create meaningful content.

## INTRODUCTION

With the emergence of the “knowledge society,” many scholars began to forecast an end to poverty, inequality, and social exclusion.<sup>1</sup> They envisioned a new information economy and, simultaneously, a more egalitarian society. However, in the decades since predictions of a future-perfect world, socio-economic inequality and social exclusion have increased significantly in the United States.<sup>2</sup> These forms of marginalization are manifested in new aspects of social life and – of significance to this article – are mapped onto the inaccessibility of ICTs (information and communications technologies) for large segments of the population. Nowhere is this complex phenomenon more pronounced than in the digital divide.

With this in mind, this article argues that the problem of increasing socio-economic inequality and social exclusion demands a deeper understanding of the intersection between technology and inequality and, correspondingly, a more aggressive and nuanced plan to address this problem. In an

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<sup>1</sup> Daniel Bell, *The Coming of Post-Industrial Society: A Venture in Social Forecasting* (New York: Harper Colophon Books, 1974); Peter F. Drucker, *Management Challenges for the 21st Century* (Oxford: Butterworth-Heinemann, 1999); Alvin Toffler, *Powershift* (New York: Bantam Books, 1990).

<sup>2</sup> David Harvey, *A Brief History of Neoliberalism* (Oxford: Oxford University Press, 2005); William Robinson, *A Theory of Global Capitalism: Production, Class, and State in a Transnational World* (Baltimore: Johns Hopkins University Press, 2008).

effort to broaden the discussion, we argue for a Digital Human Capital framework. The concept is meant to build on and extend the call for additional technology access and basic training programs, taking into account the complex nature of social exclusion in the information age.

In the 1960s, human capital theory reimagined state spending by framing education not simply as a cost, but also as an economic input, or way of increasing revenue, over the medium and long term. A human capital framework presumes that increased educational spending leads to increased productivity and, therefore, more sustainable economies. Our framework in this article expands upon this concept. Ultimately, we aim to provide an instructive tool for both understanding and challenging the digital divide as it intersects with other forms of social, political, and economic inequality. Specifically, the Digital Human Capital framework calls for a more robust vision of digital inclusion that mandates access to technology and basic computer literacy. It also calls for more rigorous forms of training that enable traditionally disenfranchised communities to harness the Internet for social, political, and economic ends. In this sense, our framework takes into account not only pathways to economic productivity, but also pathways toward fostering and developing civic engagement. A Digital Human Capital framework acknowledges that education occurs within a particular political, social, economic, and historical context. Accordingly, we contend that ICT initiatives should guide individuals to participate in this context – as well as to push back against it. For this reason, we argue that a Digital Human Capital framework would more successfully engage individuals and communities on the margins.

Finally, we argue that a reformulation of digital inclusion efforts is critical today for two interrelated reasons. First, the recent economic crisis has created a growing class of poor and low-income Americans ignored by, and excluded from, the mainstream economy and larger society. Thus, if we are to truly revitalize urban and rural America, we must have a more detailed understanding of the challenges facing a growing number of individuals. Given the centrality of technology in this knowledge society, it must be understood as key to solving this problem. Second, the task of building a robust digital infrastructure that connects all Americans is an emerging priority for the federal government. In particular, the American Recovery and Reinvestment Act of 2009 allocated \$4.7 billion for the Broadband Technology and Opportunities Program (BTOP) – supporting community broadband infrastructure, public computer centers, and adoption initiatives. While BTOP is a meaningful first step in addressing the future of digital infrastructure and connectivity, we argue that this investment was undertaken with insufficient understanding of the complex intersection between digital and social exclusion. BTOP-funded initiatives are already developing initial strategies to solve this problem. But it is critical that we also consider these new programs as research sites for designing a comprehensive understanding of the growing intersections between digital and social exclusion. Ultimately, this will enable broadband advocates to develop more effective solutions.

This article is based on a year of qualitative research on BTOP programs aimed at closing the digital divide in Philadelphia. The research methods included participant observation, semi-structured interviews, and document collection. The section that follows provides an overview of scholarship

exploring the digital divide, as well as a discussion of differing definitions of this concept, as a way to provide context for the Digital Human Capital framework we later propose.

## DIGITAL INEQUALITY IN THE INFORMATION AGE

Our proposed framework emerged following an extensive review of relevant scholarly literature and policy papers. A 2010 report commissioned by the Federal Communications Commission on the digital divide argues that “the social function of the Internet has changed dramatically in recent years... what was, until recently, a supplement to other channels of information and communication has become increasingly a basic requirement of social and economic inclusion.”<sup>3</sup> This trend has led to a persistent digital divide. The essence of this divide, however, depends on how it is defined and studied. Research identifying who has access to the Internet, who does not, and how/whether this has changed over time is abundant.<sup>4</sup> Since researchers began studying the Internet in the mid-1990s, they have documented clear differences in use by social category.<sup>5</sup>

While broadband subscriptions among U.S. households have increased steadily, Americans with less education and lower incomes are far more likely to be offline.<sup>6</sup> A federal survey of about 54,000 households conducted in October 2009 revealed glaring demographic disparities. In 2009, 84% of households with college-educated individuals 25 years and older had broadband access. By contrast, only 28% of households with individuals 25 or older with less than a high school diploma had broadband access.<sup>7</sup> Residents with high incomes and education levels, those who are younger, Asians and whites, married couples, and the employed are more likely to have access to broadband at home.<sup>8</sup> Even when controlling for factors such as income and education, African Americans and Latinos lag behind in broadband adoption.<sup>9</sup> About 56% of African American and Latino households

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<sup>3</sup> Dharma Dailey, Amelia Bryne, Alison Powell, Joe Karaganis, and Jaewon Chung, “Broadband Adoption in Low-Income Communities,” report, Social Science Research Council, Mar. 2010, accessed May 15, 2013, [http://webarchive.ssrc.org/pdfs/Broadband\\_Adoption\\_v1.1.pdf](http://webarchive.ssrc.org/pdfs/Broadband_Adoption_v1.1.pdf).

<sup>4</sup> Robert Bell, “Who Are We Trying to Digitally Include?” Digital Communities, Dec. 6, 2010, accessed May 15, 2013, <http://www.digitalcommunities.com/blogs/communities/Who-Are-We-Trying-to-Digitally-Include.html>; John B. Horrigan, “Broadband Adoption and Use in America: Results from an FCC Survey,” white paper, Federal Communications Commission, Mar. 2010, accessed May 15, 2013, [www.fcc.gov/DiversityFAC/032410/consumer-survey-horrigan.pdf](http://www.fcc.gov/DiversityFAC/032410/consumer-survey-horrigan.pdf); Jim Jansen, “Use of the Internet in Higher Income Households,” report, Pew Internet & American Life Project, Nov. 24, 2010, accessed May 15, 2013, <http://www.pewinternet.org/~media/Files/Reports/2010/PIP-Better-off-households-final.pdf>; Gretchen Livingston, “The Latino Digital Divide: The Native Born Versus the Foreign Born,” report, Pew Research Hispanic Center, July 28, 2010, accessed May 15, 2013, <http://www.pewhispanic.org/2010/07/28/the-latino-digital-divide-the-native-born-versus-the-foreign-born/>; United States Department of Commerce, National Telecommunications and Information Administration [NTIA], “Digital Nation: 21st Century America’s Progress Toward Universal Broadband Internet Access,” white paper, Feb. 2010, accessed May 15, 2013, [http://www.ntia.doc.gov/files/ntia/publications/ntia\\_internet\\_use\\_report\\_feb2010.pdf](http://www.ntia.doc.gov/files/ntia/publications/ntia_internet_use_report_feb2010.pdf).

<sup>5</sup> Paul DiMaggio, Eszter Hargittai, Coral Celeste, and Steven Shafer, “Digital Inequality: From Unequal Access to Differentiated Use,” in *Social Inequality*, ed. Kathryn Neckerman (New York: Russell Sage Foundation, 2004), 355-400.

<sup>6</sup> NTIA, “Digital Nation,” 8-9.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid., 5-8.

<sup>9</sup> United States Department of Commerce, National Telecommunications and Information Administration [NTIA], “Exploring the Digital Nation: Home Broadband Adoption in the United States,” white paper, Nov. 2010, accessed May

report a broadband connection.<sup>10</sup> This compares to about a 72% connection rate for white households.<sup>11</sup> An FCC study on broadband adoption shows similar statistics: 69% of white adults, 59% of African American adults, and 49% of Latino adults have adopted broadband.<sup>12</sup>

Discussion of the digital divide becomes even more complex when quality of Internet use is considered. During the past few years, scholars and broadband advocates began to contend that the real divide involves a schism in the intensity and nature of ICT use.<sup>13</sup> They argue that conceptualizing and addressing the digital divide must also account for the quantity and quality of Internet usage within distinct communities.<sup>14</sup> For example, of all non-broadband adopters, 14% have accessed the Internet on their cell phones, while 20% of all African-American and 25% of Latino non-broadband adopters have accessed the Internet on their cell phones.<sup>15</sup> The ability to connect to the Internet via cell phone makes, in some ways, a home broadband connection less vital. On the other hand, certain functions such as filling out a job application or financial aid form are nearly impossible to accomplish on a phone. This raises questions about the quality and type of online engagement for African American and Latino Internet users who rely primarily on their cell phones to access the Internet.<sup>16</sup>

Along these lines, researchers argue that the digital divide has evolved from major gaps in information technology access to discrepancies in communication technology use between marginalized groups in society and their more privileged counterparts. Michael Gurstein's "effective use" approach argues that viewing the digital divide purely in terms of access offers "little more than a marketing campaign for Internet service providers."<sup>17</sup> He writes that broadband access is necessary, but so is "the means for using technology in an effective way to respond to real crises in health care, education, economic development, and resource degradation."<sup>18</sup>

Scholarship on disparities in connectivity reflects the persistent inequality among groups of individuals in American society today, and calls attention to the ways in which digital exclusion

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26, 2013, [http://www.ntia.doc.gov/files/ntia/publications/esa\\_ntia\\_us\\_broadband\\_adoption\\_report\\_11082010\\_1.pdf](http://www.ntia.doc.gov/files/ntia/publications/esa_ntia_us_broadband_adoption_report_11082010_1.pdf), 11, 15.

<sup>10</sup> Ibid., 15; Livingston.

<sup>11</sup> NTIA, "Exploring the Digital Nation," 15.

<sup>12</sup> Horrigan, 7.

<sup>13</sup> Jan van Dijk, *The Deepening Divide: Inequality in the Information Society* (Thousand Oaks, CA: Sage, 2005); Linda A. Jackson, Yong Zhao, Anthony Kolenic III, Hiram E. Fitzgerald, Rena Harold, and Alexander von Eye, "Race, Gender and Information Technology Use: The New Digital Divide," *Technology & Behavior* 11, no. 4 (2008): 437-442; Susannah Fox, "Internet Usage Trends – Through the Demographic Lens," report, Pew Internet & American Life Project, Nov. 6, 2006, accessed May 15, 2013, <http://www.pewinternet.org/~media/Files/Presentations/2006/2006%20-%2011.6.06%20Internet%20Usage%20Trends-Through%20the%20Demographic%20Lens.pdf>.

<sup>14</sup> Brian L. Hawkins and Diana G. Oblinger, "The Myth About the Digital Divide," *EDUCAUSE Review* 41, no. 4 (July-Aug. 2006): 12-13; Organisation for Economic Co-operation and Development [OECD], *Human Capital: How What You Know Shapes Your Life* (Paris: OECD Publishing, 2007).

<sup>15</sup> Horrigan.

<sup>16</sup> Jesse Washington, "For Minorities, New 'Digital Divide' Seen," *USA Today*, Jan. 10, 2011, accessed May 15, 2013, [http://www.usatoday.com/tech/news/2011-01-10-minorities-online\\_N.htm](http://www.usatoday.com/tech/news/2011-01-10-minorities-online_N.htm).

<sup>17</sup> Michael Gurstein, "Effective Use: A Community Informatics Strategy Beyond the Digital Divide," *First Monday* 8, no. 12 (Dec. 2003), accessed May 15, 2013, <http://firstmonday.org/ojs/index.php/fm/article/view/1107/1027>.

<sup>18</sup> Ibid., ¶ 1.

intersects with social and economic exclusion. In their FCC-sponsored qualitative study of broadband adoption, Powell, Bryne, and Dailey argue new research on digital exclusion “has begun to examine the nature of inclusion and exclusion.”<sup>19</sup> Those who are older or poor are already less likely to subscribe to an Internet Service Provider. When these factors are layered on top of extenuating circumstances, such as a physical disability or lack of education, it is particularly challenging for policymakers to implement workable solutions to digital exclusion. These scholars highlight the complexity of understanding and addressing the digital divide today. Specifically, their research demonstrates the ways in which digital exclusion *intersects* with social and economic exclusion, and points to the ways in which social and economic exclusion are *further exacerbated* by digital exclusion. They conclude that “barriers to access are both social and technical. In many cases, the social infrastructure supporting broadband access for low-income people is more precarious than the physical infrastructure.”<sup>20</sup> These authors echo what other scholars have noted before them, namely that educational systems and programs, the healthcare industry, employers, and government agencies at all levels have shifted services online, thereby making access essential for full participation in society.

Powell, Bryne, and Dailey take a community-based and “ecological” approach to understanding broadband adoption and what they term as “un-adoption,” or loss of Internet access because of an inability to afford monthly fees.<sup>21</sup> This uniquely designed study involved community groups as both responders and partners in the research. Among the authors’ overarching findings is that members of low-income and otherwise marginalized communities realize broadband access is increasingly necessary for social and economic inclusion. In contrast to most survey research that characterizes non-adopters as perceiving the Internet to be irrelevant, the authors of this study found no such group, even among respondents with profound histories of marginalization, including people who are homeless, disabled, formerly jailed, recent immigrants, and even those living without electricity or running water. In fact, nearly 100% of those interviewed rely on the Internet for activities related to employment, education, and various social services.

### *Technology and Inequality*

In their synthesis of social science research exploring the influence of technology on inequality, DiMaggio, Hargittai, Celeste, and Shafer identify four broad themes under which most of this research can be categorized.<sup>22</sup> First, advances in technology require additional skills and competencies among workers, which increases inequality. Conversely, as a demand for skilled workers increases with technological advances, inequality actually decreases. Researchers taking this position have argued that this can happen in three ways: 1) when unskilled workers are replaced by a lesser number of skilled workers who earn better pay, workplace inequality decreases; 2) when technological changes are implemented in ways that do not replace workers, but makes work more

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<sup>19</sup> Allison Powell, Amelia Bryne, and Dharma Dailey, “The Essential Internet: Digital Exclusion in Low-Income American Communities,” *Policy & Internet* 2, no. 2 (2010): 163.

<sup>20</sup> Ibid., 164.

<sup>21</sup> Ibid., 171.

<sup>22</sup> DiMaggio, Hargittai, Celeste, and Shafer.



complex and workers more autonomous; and 3) because technological advances improve the chances of upward mobility even if they do not reduce structural inequality more broadly. Third, new technologies enhance social equality by democratizing consumption. Lastly, new technologies increase the capacity of groups to mobilize and participate politically, thereby potentially altering the structure of political interests. These authors argue that despite the diversity of views on the relationship between technology and inequality, most researchers who study it agree that: 1) the social implications of new technologies reflect the interests of those who invest in them; 2) technologies are continually reinvented by users and designers; and 3) technologies adapt to social realities “rather than ‘influencing’ society as an external force.”<sup>23</sup> Our position on the role of technology and education emerges from a firm belief that, when combined, they enable individuals to participate in social and political processes. This participation can potentially generate real and positive change for individuals and communities. Just as understanding access in simple binary terms of “haves” vs. “have-nots” paints a partial portrait of the digital divide, positioning new technological developments as panaceas for complex social problems also narrows our understanding of the possibilities inherent in the applied use of technologies.

## A PROPOSED FRAMEWORK: DIGITAL HUMAN CAPITAL

This review of digital inclusion literature suggests that initiatives to address the digital divide must go beyond simply providing connectivity. Based on this, we argue for a Digital Human Capital framework that embraces the sentiment “that wealth in its broadest sense includes human beings.”<sup>24</sup> Since human capital theory was officially established in 1960, economists have used it to draw connections among skills and education and personal income. Early on, economists treated investments in education as analogous to the purchase of any capital asset through a simple cost-benefit analysis that compared the cost of educational attainment to the long-term distribution of income.<sup>25</sup> Subsequent research in the field of human capital expanded statistical measurements to include not only formal education, but also on-the-job training, work experience, and the number of weeks worked.<sup>26</sup> Human capital, and the value associated with it, may be defined simply as “the tacit knowledge held in people’s brains.”<sup>27</sup>

Ultimately, human capital makes it more likely that members of a society will achieve not only financial success, but also social and personal success. Governments across the globe are beginning to recognize that by fostering a knowledge economy, they can help citizens compete in a world defined by information technology. Although there was a time when strong economies depended upon physical assets,<sup>28</sup> such as owning the most powerful tractors or the most efficient weaving

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<sup>23</sup> Ibid., 361.

<sup>24</sup> Irving Fisher, *The Nature of Capital and Income* (New York: Macmillan, 1906), 51.

<sup>25</sup> Mark Blaug, *Economics of Education: A Selected Annotated Bibliography* (New York: Pergamon Press, 1966).

<sup>26</sup> Jacob A. Mincer, *Schooling, Experience, and Earnings* (New York: Columbia University Press, 1974); Charles Scott Benson, *The Economics of Public Education*, 3rd ed. (Boston: Houghton Mifflin, 1978).

<sup>27</sup> Joseph A. DiVanna and Jay Rogers, *People: The New Asset on the Balance Sheet* (New York: Palgrave MacMillan, 2005), xi.

<sup>28</sup> OECD.

looms, today information is a primary source of economic growth and information technology has transformed traditional business practices, ranging from agriculture to sales. As the Organisation for Economic Co-operation and Development points out, the knowledge economy is not simply changing work roles – it is creating new ones.<sup>29</sup> Examples of this include nonprofit organizations that now routinely hire social media managers, and libraries that now employ online researchers to assist patrons remotely. A recent working paper by the U.S. Census Bureau identifies “numerical machine control operator,” as the fastest growing occupation between 1983 and 2002.<sup>30</sup> This position, which involves programming and running factory machinery, could exist only in a knowledge-based economy.

But in order for individuals to take advantage of opportunities presented by the knowledge economy, they need access to computers, skills training, and technical support. Economists have found that when countries strongly invest in human capital, this investment ultimately facilitates technology adoption. As a consequence, better-educated countries are quicker to adopt skilled-labor-augmenting technologies. It is no surprise, then, that better-educated countries have experienced faster shifts toward schooling-intensive industries.<sup>31</sup>

We propose combining and expanding the concepts of human capital and the knowledge economy as the basis for our theory of Digital Human Capital. We ground the framework on two interrelated positions. First, the Internet is an increasingly critical tool in everyday life, mediating our ability to be productive, educated, and critically engaged members of society – at both the individual and community levels. Accordingly, the existing digital divide must be understood as more than a problem of mere connectivity, as it is entangled in other forms of social and economic exclusion. For this reason, a Digital Human Capital framework calls for a more rigorous and grounded response to the digital divide, making sure communities have quality access, but also that they possess the tools and skills to use the Internet for social change.

We aim for policymakers to apply a Digital Human Capital framework to computer training initiatives (see Table 1 below). As a starting point, we have developed four “outcomes” for program participants: civic engagement, influence on policy, social change, and economic advancement. The framework then identifies four “project values and competencies” necessary to achieve these outcomes. These categories include ideology/mission of the digital inclusion initiative, partnerships, skills taught, and learning context.

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<sup>29</sup> Ibid.

<sup>30</sup> Emin Dinlersoz and Jeremy Greenwood, “The Rise and Fall of Unions in the U.S.,” Working Paper 18079, National Bureau of Economic Research, May 2012, accessed May 15, 2013, <http://www.nber.org/papers/w18079>.

<sup>31</sup> Antonio Ciccone and Elias Papaioannou, “Human Capital, the Structure of Production, and Growth,” *The Review of Economics and Statistics* 91, no.1 (2009): 66-82.



*Table 1: Tool for Applying a Digital Human Capital Framework to Digital Inclusion Initiatives*

Project Values and Competencies	Digital Human Capital outcome: Civic engagement	Digital Human Capital outcome: Influence on policy	Digital Human Capital outcome: Social change	Digital Human Capital outcome: Economic advancement
<b>Ideology/mission</b>	To involve participants in community issues and to produce meaningful experiences and explore solutions	To influence policy and push for reform benefitting marginalized communities	To push for significant changes in cultural values and norms, which currently disenfranchise groups	To create opportunities for living wage jobs and personal educational goals
<b>Partnerships</b>	Include advocates for technology, health, education, and economic advancement; governmental entities	Realize positive impacts on a broad cross-section of groups and concerns	Collaborative efforts to push for inclusive social programs and policies	Collaborative efforts to push for education, skills training and other opportunities for living-wage jobs
<b>Skills taught</b>	Video recording and editing, blogging, photography, online social networking, website creation	Storytelling on digital platforms, sharing videos with policy makers, online petitioning	Video recording and editing, blogging, photography, online social networking, website creation	Relevant software programs, online job searching, electronic resume creation
<b>Learning context</b>	Public computing centers and existing social service infrastructure (e.g. libraries, community development corporations, recreation centers, senior centers)	Public computing centers and existing social service infrastructure (e.g. libraries, community development corporations, recreation centers, senior centers)	Public computing centers and existing social service infrastructure (e.g. libraries, community development corporations, recreation centers, senior centers)	Public computing centers and existing social service infrastructure (e.g. libraries, community development corporations, recreation centers, senior centers)

In order to *civically engage* participants – at both the community and political levels – the mission of a digital inclusion initiative must include efforts to involve participants in public affairs, as well as efforts to produce meaningful experiences and explore solutions. The initiative must also partner with governmental entities, in addition to a broad range of advocates (for issues such as technology, health, education, and economic development). In order to foster civic engagement as an outcome for participants, digital inclusion efforts should teach a range of multimedia skills including shooting and editing video, using social networking tools, and creating and maintaining a website. The framework proposes that digital inclusion training take place in public computing centers and spaces that currently provide social services, such as libraries and senior centers.

When the National Telecommunications and Information Administration (NTIA) solicited grant proposals for broadband adoption initiatives, the agency outlined a wide variety of goals for applicants. For instance, NTIA specified that projects should fulfill a specific public need for broadband service – in an area such as education, employment, youth development, or economic development. The funding call also noted that the applicants' strategy for stimulating broadband

demand must promote broadband adoption.<sup>32</sup> Nowhere in the call for grant applications, however, did NTIA specify that the agency expected sustainable adoption initiatives to foster civic engagement. In practice, some BTOP-funded programs do encourage deliberative discourse and even activism. However, many grantees teach basic web searching and how to apply online for entry-level jobs. Other programs, while ambitious, also focus on small business development, with no civic engagement component. For instance, a \$1.4 million grant in Washington County, Maine is being used to teach local farmers and fisherman how to use software applications such as Microsoft Office and Quickbooks. Participants also learn basic computer set up and maintenance.<sup>33</sup> A Digital Human Capital approach suggests that the economic benefits of this training would be more far-reaching if accompanied by training that, for instance, taught these farmers (who live in the poorest county in their state) to use digital tools for raising awareness of pollution that harms fish or the impact climate change is having on their crops.

Enabling participants to *influence policy* is another Digital Human Capital outcome. Achieving this goal requires that training programs be committed to pushing for reforms meant to benefit marginalized communities. Digital inclusion initiatives must reach individuals involved in a broad cross-section of issues (i.e. workers' rights, environmental justice, affordable healthcare). Participants must learn not only how to tell their stories on digital platforms, but how to disseminate this content to policymakers. Trainers must also expose participants to online advocacy strategies, such as creating electronic petitions. As with all Digital Human Capital outcomes, the framework proposes that training take place in public computing centers and existing social service infrastructure, such as recreation centers.

By encouraging political engagement, a Digital Human Capital framework considers education within the context of one's environment and position in society. In fact, it is only within this context that the Internet becomes a powerful tool for individuals and communities. A Digital Human Capital approach acknowledges that basic computer skills are necessary to participate in the job market. However, it also takes a more politicized and mobilized approach to teaching. Because this framework situates computer education/training in a larger social context that encourages the active participation of individuals in civic and social life, it differs dramatically from a skills-based computer training approach.

The outcome we call *social change* mandates that digital inclusion efforts push for significant changes in cultural values and norms that currently disenfranchise certain sectors of society. Computer training efforts need to collaborate with advocacy organizations to push for inclusive social programs and policies. As a means of achieving this outcome, participants should learn how to record and edit video, how to host a blog, how to shoot photos, and how to communicate via

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<sup>32</sup> For example, see United States Department of Commerce, National Telecommunications and Information Administration [NTIA], "Connected Tennessee, LLC," accessed May 15, 2013, <http://www2.ntia.doc.gov/grantee/connected-tennessee-llc>.

<sup>33</sup> For example, see United States Department of Commerce, National Telecommunications and Information Administration [NTIA], "Axiom Technologies, LLC," accessed May 15, 2013, <http://www2.ntia.doc.gov/grantee/axiom-technologies-llc>.

various social networking sites. Again, training should be hosted in libraries and other settings where social services are already offered. This Digital Human Capital outcome incorporates key elements of social capital, as conceived by Coleman.<sup>34</sup> He characterizes social capital as any entity that consists of some aspect of social structures, and that enables actors to take action within that structure. Additionally, social capital is “productive,”<sup>35</sup> ultimately enabling an outcome that could not transpire without its presence. As a real-life example, Coleman cites South Korean student activists who participate in clandestine “study circles.” Members of these circles were affiliated through school or church, but they avoided detection by never actually meeting. Instead, they communicated through a representative. Coleman points to two kinds of social capital in this scenario. First, the school or church laid the foundation upon which the study circles were built. Second, the study circles themselves were a form of social capital, as they facilitated political opposition in a society where dissent was outlawed. According to Coleman, social capital is created and exchanged in non-political contexts as well. For instance, members of a mothers’ group may all meet with their children on the playground or at the science museum. But they may also rely on these connections when they need someone to babysit or carpool.

Similarly, a Digital Human Capital framework can be defined according to its function. For example, participants in a computer training program operationalize our concept when they use their technology skills to create an online petition urging members of city council to raise the local minimum wage. As another example, Digital Human Capital is expended when families who lack health insurance produce a documentary about their struggle for medical coverage and deliver it to members of Congress. While our framework shares several characteristics with Coleman’s social capital concept, it is distinct in key ways. First, and perhaps obviously, the capital in question must be centered around technology skills. Second, the function must involve civic engagement and/or social change. This is in contrast to the social capital example involving the mothers who form a babysitting cooperative. Our rationale for limiting the Digital Human Capital framework to apply only to issues involving broad, societal issues is directly related to policy. We are influenced by Gilead’s “philosophical critique” of human capital theory.<sup>36</sup> While a key aim of education may be for individuals to maximize wealth, that wealth should be used to promote the public good and social cohesion. Our framework adopts the values described by Gilead. The potential private good that goes along with using ICTs to improve one’s life does not inherently benefit society as a whole. We assert that computer training initiatives must teach students to use their newfound technology skills for broad social change.

In order to help participants achieve *economic advancement*, another Digital Human Capital outcome, computer training efforts must be ideologically committed to helping participants obtain living-wage jobs and achieve personal educational goals. Programs should engage in collaborative efforts to push for education and skills training that will lead to living-wage jobs. With an eye toward economic

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<sup>34</sup> James S. Coleman, “Social Capital in the Creation of Human Capital,” *The American Journal of Sociology* 94, supplement (1994): S95-S120.

<sup>35</sup> *Ibid.*, S99.

<sup>36</sup> Tal Gilead, “Human Capital, Education and the Promotion of Social Cooperation: A Philosophical Critique,” *Studies in Philosophy and Education* 28, no. 6 (2009): 555.

advancement, digital inclusion initiatives should introduce participants to relevant software programs (i.e. word processing, spreadsheets, slideshow presentations), job search techniques, and resume creation. Existing community spaces are also the ideal setting for computer training geared toward helping participants move up the economic ladder.

Table 1 above is meant to serve as a tool for evaluating broadband projects and initiatives. Project leaders and funders can consider a project's values and competencies (its ideology or mission, practices, skills taught, and learning context) in relation to the Digital Human Capital outcomes of civic engagement, influence on policy, social change, and economic or social advancement. In this way, the framework is operationalized, and a project's strengths and weaknesses may be identified.

### *Applying Digital Human Capital to Two Initiatives*

The authors intend for this framework to serve as a measurement tool for evaluating digital inclusion initiatives, particularly government-funded efforts. It is also hoped that a Digital Human Capital approach will be used to guide existing broadband access projects toward more meaningful and sustainable outcomes for low-income participants. The section operationalizes our proposed Digital Human Capital framework by applying it to two large federally-funded initiatives. We argue that funders of digital inclusion efforts should require grantees to incorporate the values and competencies detailed above into their training programs.

Congress created the BTOP initiative in 2009 as part of the American Recovery and Reinvestment Act. The program allocated \$4.7 billion for broadband infrastructure, public computer centers, and adoption programs. BTOP exemplifies the conviction that expanding Internet access and usage has the potential to bolster the U.S. economy. In this section, we examine several projects supported by BTOP grants that, when analyzed through a Digital Human Capital framework, incorporate elements that go beyond computer training to foster civic engagement, spur social change, propel economic advancement, and influence policy.

The Freedom Rings Partnership – headed by the Philadelphia Urban Affairs Coalition and the City of Philadelphia – received \$18.6 million to bolster local Internet access, jobs training, and technology enhancements in low-income communities. This broad, diverse partnership includes Philadelphia's public library system, Drexel University, the Philadelphia Housing Authority, the city Parks and Recreation Department, and more than ten non-profit organizations working on issues of homelessness, healthcare, drug addiction, youth education, and media production. The Freedom Rings Partnership encompasses three core elements: 1) creating or refurbishing 77 public computer centers throughout Philadelphia; 2) developing an awareness campaign around the digital divide and broadband adoption; and 3) building digital literacy skills and increasing broadband adoption for more than 10,000 Philadelphians. The underlying strategy of the Freedom Rings Partnership is to embed the public computer centers and broadband training programs in the city's existing social service infrastructure. The rationale behind this approach is to avoid compartmentalizing the BTOP program, and technology more generally, and instead incorporate it into other aspects of social life.

The diversity of partners, combined with a strategy linking computer programs and existing social service infrastructure, makes the Freedom Rings Partnership uniquely comprehensive. Consequently, this initiative serves as a useful model for applying a Digital Human Capital framework. By operationalizing the framework, we illustrate how programs can effectively build civic engagement and contribute to democratic discourse, while creating possibilities for economic and professional advancement.

Our first example focuses on Philadelphia FIGHT (Field Initiating Group for HIV Trials), among the most prominent non-profit collaborators in the Freedom Rings Partnership. Philadelphia FIGHT is an HIV/AIDS service organization that provides primary care, education, outreach, and social services for people living with HIV. FIGHT has long recognized the critical role of information access, and specifically Internet access, in people's ability to treat and control their medical conditions. In 1994 FIGHT created Critical Path, a free dial-up ISP, which hosts e-mail accounts, listservs, and websites along with Internet service. The aim of Critical Path is to provide individuals with access to the full range of HIV/AIDS prevention and treatment information, enabling them to make informed healthcare decisions. The organization's mission extends beyond information access, however. The mission of the Critical Path AIDS Project within the organization is to improve and accelerate effective treatment for individuals living with HIV/AIDS. Its website is geared toward people "already fighting the system" and those motivated to "get involved in activist movements."<sup>37</sup>

This vision of Internet access as a critical channel for information and, subsequently, as a catalyst for civic engagement, activism, and policy reform efforts is further developed in the Freedom Rings Partnership. FIGHT is responsible for managing more than 20 public computing centers across the city. These centers host digital literacy training programs, including one held at the Institute for Community Justice (ICJ). The ICJ is a FIGHT-sponsored project that provides "community-inspired, community-led solutions for healing in a time of mass imprisonment."<sup>38</sup> The institute hosts a diverse range of classes, from courses teaching formerly incarcerated people to live with HIV, to yoga practice and a knitting group.<sup>39</sup> Using the ICJ as an enabler of computer training fulfills one requirement of a Digital Human Capital framework.

FIGHT educators run computer courses focused on social media and digital storytelling. Instructors teach students to develop an "electronic voice" by creating a script for a digital story. Participants record voiceovers and practice using movie creation tools. Digital Human Capital emphasizes the need for digital inclusion initiatives to incorporate civic engagement and social change techniques into their curricula. In line with this goal, students enrolled in these FIGHT workshops show their movies during public screenings, as well as post them to online sites such as YouTube and Vimeo where anyone can view them. Another FIGHT course teaches students to create their own blogs.

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<sup>37</sup> Philadelphia FIGHT, "Critical Path Project," accessed May 26, 2013, <http://fight.org/fight-programs/critical-path-project/>.

<sup>38</sup> Philadelphia FIGHT, "Institute for Community Justice," accessed May 15, 2013, <http://fight.org/fight-programs/institute-for-community-justice/>.

<sup>39</sup> Personal interview with Mendal Polish, Critical Path trainer, May 21, 2013.

This class explores how people use personal websites for both political advocacy and community engagement.

For instance, participants in ICJ computer classes were heavily involved in “Ban the Box,” an effort to pass a law in Philadelphia to prohibit employers from putting a checkbox on job applications asking if applicants have been convicted of a crime.<sup>40</sup> Many ICJ students also use their blogs to comment on political issues, such as one entry on the *Spring Forward Now* blog questioning why transit police earn lower salaries than city officers. This same blog entry posed the question, “Why is the Republican Party twisting the facts to get people to turn farther away from President Obama?”<sup>41</sup> Another participant’s blog advocates for a broad range of policy changes, including enabling all school children to qualify for free lunches, mandating term limits for legislators, and reforming the Bureau of Indian Affairs.<sup>42</sup> In a post about universal healthcare, this ICJ class participant writes (spelling and grammar errors in original):

If Legislature were not so involve in receiving campaign contributions from large pharmaceutical corporation for their votes, they might be more inclined to vote for Universal Health Care. Taxpayers must begin to demand that big drugs companies do not hire lobbies in Washington to do their bidding for them. Congress should vote on limiting campaign contribution for each politician and let the freedom of information act do what it is really suppose to do which is to release information on who get monies from corporation that holds or health care hostage.<sup>43</sup>

Students also learn to use social media venues to share insights with people facing challenges similar to their own. The author of a blog called *Incarcerated and the Life* writes about his mother tossing him out of their home at age 12, after he revealed that he was gay (spelling and grammar errors in original):

So i went down to 30th street station and started to cry for a long time, and i was sitting there when this person came up to me and asked me if i was OK and if i needed someone to talk to so i said yes. i didn't know he was a pimp and he told me where he was living. this was the beginning of my life and the things that i want through.<sup>44</sup>

When analyzed through the lens of Digital Human Capital, digital storytelling and social media courses take on additional significance. Philadelphia FIGHT’s workshops give participants basic new media skills but, importantly, they enable members of a marginalized group to harness the Internet and push for policy reforms that will benefit their own lives. By learning social media skills,

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<sup>40</sup> Ibid.

<sup>41</sup> “Spring Forward,” blog, Mar. 22, 2012 entry, accessed May 26, 2013, <http://springforwardnow.blogspot.com/>.

<sup>42</sup> “Buster-Gordon,” blog, various entries, accessed May 26, 2013, <http://buster-gordon2.blogspot.com/search?updated-min=2012-01-01T00:00:00-08:00&updated-max=2013-01-01T00:00:00-08:00&max-results=16>.

<sup>43</sup> Ibid., May 2012 entry.

<sup>44</sup> “Incarcerated and the Life,” blog, May 27, 2011 entry, accessed May 26, 2013, <http://incarceratedandthelife.blogspot.com/>.



computer training participants acquire the potential for a new and diverse means of self-expression. Through their first-person accounts, students can communicate concerns with a broad audience, document local issues, and push for social justice and advocate for change. All of these possibilities represent forms of civic engagement, and are key elements of a Digital Human Capital framework.

The Media Mobilizing Project (MMP),<sup>45</sup> another sub-grantee of the Freedom Rings Partnership, is guided by a vision that embodies key aspects of the Digital Human Capital framework. Founded in 2005, MMP uses media and communications to build a social movement focused on issues of poverty and socio-economic inequality. As part of this work, MMP established the program Our City Our Voices (OCOV) in 2007. The aim was to train low-wage workers and immigrants in basic journalism and video production. The plan was to use Wireless Philadelphia, an emerging citywide wireless network built by Earthlink, as a central backbone for getting immigrants and low-wage workers to share their stories through the Internet. However, shortly after OCOV was established, Earthlink, pulled out – jeopardizing long-term plans that relied on a city blanketed in Wi-Fi. However, because digital inclusion was a core part of the OCOV program, MMP and community partners organized around saving the Wi-Fi network. MMP met with city council members and the mayoral administration. More than 100 people participated in a citywide call-in, phoning the mayor and urging him to save the Wireless Philadelphia network. This strategy succeeded and, equally significant, MMP and its members became engaged in digital inclusion.

Through the Freedom Rings Partnership, MMP is focused on training poor and working people in media production so they can use digital tools to organize and build power. MMP manages six computer classes and trains participants across poor and working class communities in order to build solidarity and realize common goals. The cornerstone of this program is MMP's Media and Communication Institute (MCI), which holds events about every five months. The aim of the events is to train poor and working people in media and communications in order to "gain messaging skills and use today's media tools to win their battles for rights and dignity."<sup>46</sup> MCI events consist of three 6-hour classes and about 25 low-income participants typically enroll. These students, most of whom lack broadband access, learn media and messaging skills as well as how to use digital tools to document social problems directly impacting their lives and their larger communities. They also learn to use digital texts as tools for educating the public about issues such as fair labor practices, equitable public school funding, affordable access to healthcare, and sufficient municipal funding for public services.

MCI is meant to provide the skills necessary to tell and share stories, ultimately building power and creating change – a vision that embodies the Digital Human Capital features of civic engagement and social change. These outcomes are exemplified by the MCI event held in spring 2012. Twenty-three people, most of whom lacked broadband Internet connections in the home, attended the event, which was taught in both English and Spanish. An instructor named Marissa explained that

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<sup>45</sup> One of the authors of this article is a founder of Media Mobilizing Project. In the interests of scholarly objectivity, the other authors are not involved in this organization.

<sup>46</sup> Media Mobilizing Project, "Learning to Tell Our Own Stories at MMP's Media Institute," Apr. 5, 2013, accessed May 26, 2013, <http://www.mediamobilizing.org/updates/learning-tell-our-own-stories-mmeps-media-institute>.

the aim of the institute was to “show that social movements begin with the telling of untold stories.” Marissa detailed how digital storytelling enables people to understand one another’s struggles, which she argued is the first step in building collective power. Marissa contended that the 1852 publication of Harriet Beecher Stowe’s novel *Uncle Tom’s Cabin* strengthened the abolitionist movement and laid the groundwork for the Civil War.<sup>47</sup> Marissa then relayed an oft-cited but unverified story that President Lincoln once addressed Harriet Beecher Stowe by saying “so you’re the little woman that wrote the book that started this great war.”<sup>48</sup> The anecdote about *Uncle Tom’s Cabin* framed MCI’s goal to provide Internet-based media production skills, so that participants can create media content for social change and policy reform.

Throughout the 18-hour institute events, instructors teach basic computer skills as well as the technical and narrative skills necessary for digital storytelling. By the end of the training, students produce their own videos focused on issues of unemployment, immigration, and healthcare. For example, Tom,<sup>49</sup> a 55 year-old public middle school teacher, was part of MMP’s fall 2012 institute event. In the winter of 2013, the Philadelphia School Reform Commission announced plans to close his middle school. Tom utilized the social media and media messaging skills he had acquired, as well as the relationships he built through the institute, to run a campaign to save the school. The campaign used Facebook and Twitter and placed newspaper editorials. MMP also worked with Tom to make a video about the struggle to save the school. Following the distribution of the video, Tom organized a community discussion and a rally to keep the school open. Ultimately, in a year when Philadelphia shuttered 23 public schools, Tom’s school was spared.

In another instance, a group of three immigrants from South and Central America participated in MMP’s spring 2011 institute event. They used the training as the basis for creating a radio program, *Radio Unidad*, which broadcasts on a low-power FM radio station in West Philadelphia. The producers claim that *Radio Unidad* is “Philadelphia’s only Spanish-language news show on the FM dial.” It focuses on “stories about the problems poor and working class communities face” and the “solutions our communities are building to demand our human rights.”<sup>50</sup> One episode they produced in the summer of 2012 focused on “the impacts of ‘Secure Communities’ legislation, which grants police officers many of the same powers as Immigrant and Customs Enforcement officials.”<sup>51</sup>

As these examples illustrate, like FIGHT, MMP’s goals extend beyond training participants to use the Internet to apply for jobs and to access services. Rather, MMP intends for participants to capitalize on digital literacy and media production skills as a springboard for cultivating social and

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<sup>47</sup> Will Kaufman, *The Civil War and American Culture* (Edinburgh: Edinburgh University Press, 2006), 18.

<sup>48</sup> Harriet Beecher Stowe Center, “Impact of *Uncle Tom’s Cabin*, Slavery, and the Civil War” (2011), accessed May 26, 2013, <http://www.harrietbeecherstowecenter.org/utc/impact.shtml>.

<sup>49</sup> A pseudonym is used to protect the identity of the participant.

<sup>50</sup> Radio Unidad, “About Radio Unidad,” accessed May 26, 2013, <http://www.mediamobilizing.org/our-stories-radio-unidad/about-radio-unidad#main>.

<sup>51</sup> Radio Unidad, “Secure Communities,” June 27, 2012, accessed May 26, 2013, <http://www.mediamobilizing.org/updates/secure-communities>.

political change. As articulated by Sen in his “capabilities” approach to welfare,<sup>52</sup> in order to take advantage of online resources, one must be able to transform these resources into constructive activities. So while one function in a person’s life might be accessing the Internet, that person must also possess the “capability” to generate a valuable outcome from online use. Furthermore, one must exercise the “agency” necessary to bring about positive change – by actively participating in that change, rather than being a passive recipient of it.<sup>53</sup>

## CONCLUSION

Digital literacy, computer literacy, and ICT literacy are terms used to conceptualize the breadth, scope, and purpose of digital education initiatives for non-adopters. Frequently, skills-based programs focus singularly on teaching basic computer skills meant to enable participants to compete for and secure employment. We argue that these programs offer a somewhat decontextualized and partial understanding of digital exclusion (and social and economic exclusion), as they position access to technology alone as contributing to broad-based economic and social equality.<sup>54</sup> Given that the term “literacy” is often used to explain and devise approaches to bridging the digital divide, our argument partially draws from literacy scholarship and theory.

Policymakers and advocacy organizations have framed literacy as a tool to secure greater social equity; reduce crime rates; develop better citizens; foster economic development, wealth, and productivity; and advance political stability.<sup>55</sup> These perceptions share an unmistakable similarity to the hopes often mapped onto access to broadband technology, and are “dangerously unexamined.”<sup>56</sup> Historian Harvey Graff finds that increasing levels of literacy within a society do not correlate with the production of wealth, industrialization, urbanization, or democratization.<sup>57</sup> Graff’s research on literacy campaigns in 19th century Canada shows that schooling did not lead to social mobility, nor did literacy erase patterns of inequality and stratification – by origins, class, sex, race, or age. Graff argues that the social hierarchy “was ordered more by the dominance of social ascription than by the acquisition of new, achieved characteristics” such as literacy.<sup>58</sup> He also asserts that, historically, policymakers controlled how literacy was taught to ensure that members of the poor and working classes did not engage in critical or inflammatory reading and writing practices that might be disruptive to the larger social order, thereby preventing literacy from becoming a tool used to advance social equality.

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<sup>52</sup> Amartya Sen, *Development as Freedom* (New York: Anchor Books, 2000).

<sup>53</sup> Ibid., 381.

<sup>54</sup> Virginia Eubanks, *Digital Dead End: Fighting for Justice in the Information Age* (Cambridge, MA: MIT Press, 2011).

<sup>55</sup> James P. Gee, *Social Linguistics and Literacies: Ideology in Discourses* (New York: Routledge, 2008).

<sup>56</sup> Eubanks, xv.

<sup>57</sup> Harvey Graff, *The Legacies of Literacy: Continuities and Contradictions in Western Culture and Society* (Bloomington, IN: Indiana University Press, 1991).

<sup>58</sup> Ibid., xviii.

Our argument for a Digital Human Capital framework begins with the simple assumption that the digital divide is connected to other forms of social and economic exclusion, and therefore programs that address the digital divide must flow from this more complex vision. Accordingly, we suggest that BTOP programs must go beyond connectivity, and must transcend computer skills training and content consumption. In order for ICT initiatives to provide economic benefits for both individuals and society, policymakers must design digital inclusion initiatives that ultimately lead to diversity in media ownership, that expand digital literacy, and that teach participants to create meaningful content. The Internet possesses immense potential for civic engagement. Yet, ironically, this platform is effectively marginalizing people who lack access to it. Therefore, a Digital Human Capital framework takes the position that ICT training initiatives must shift toward critical social and cultural practices that encourage full participation in community affairs, cultural life, and official institutions.<sup>59</sup> In fact, the indisputable connection between a politically engaged citizenry and access to information mandates that this integration occur.

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<sup>59</sup> Roger Silverstone, "Regulation, Media Literacy and Media Civics," *Media, Culture & Society* 26, no. 3 (2004): 440-449.

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