

Digital Equity Through Service-Learning Partnerships: Bridging Academic Learning and Community Impact

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Abstract

This article examines the emerging practice of utilizing service-learning partnerships to address digital equity challenges in underserved communities. Drawing on empirical research and organizational case studies, it analyzes how higher education institutions, community organizations, and private sector partners can collaboratively design interventions that simultaneously enhance student learning outcomes and address digital divides. The analysis reveals that effective partnerships leverage complementary expertise across sectors, create sustainable engagement models, and develop culturally responsive approaches to technology access, skills development, and support systems. When properly implemented, these interventions produce measurable improvements in digital inclusion while providing students with authentic professional development experiences. The article concludes with a framework for establishing, maintaining, and evaluating service-learning partnerships focused on digital equity, offering actionable insights for academic institutions and community partners seeking to develop similar initiatives.

Keywords: digital equity, service-learning partnerships, higher education, community organizations, private sector collaboration, digital divide, digital inclusion, digital equity interventions

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The digital divide—the gap between those who can fully benefit from digital technologies and those who cannot—persists despite decades of technological advancement and widespread internet adoption. As essential services, education, healthcare, employment opportunities, and civic engagement increasingly move online, digital inequities have evolved from inconveniences to fundamental barriers to social and economic participation (van Dijk, 2020). The COVID-19 pandemic dramatically exposed and exacerbated these divides, with vulnerable populations facing disproportionate challenges in accessing remote work, education, and services (Beaunoyer et al., 2020).

Service-learning, an educational approach that integrates meaningful community service with instruction and reflection, offers a promising yet underutilized strategy for addressing digital equity. By connecting student learning with community needs, service-learning partnerships create mutual benefit: students develop real-world skills while communities gain access to resources and expertise that might otherwise be unavailable to them (Bringle & Clayton, 2021).

This article explores how higher education institutions, community organizations, and businesses can develop effective service-learning partnerships specifically focused on digital equity interventions. Drawing on established research and emerging practices, it provides a roadmap for creating sustainable collaborations that produce measurable impacts for both students and communities.

The Digital Equity Landscape

Defining Digital Equity in Contemporary Contexts

Digital equity refers to the condition in which all individuals and communities have the information technology capacity needed for full participation in society, democracy, and the economy (National Digital Inclusion Alliance, 2019). This concept extends beyond simple access to hardware and connectivity—what scholars have termed "first-level digital divide" issues (van Dijk, 2020). Comprehensive digital equity encompasses multiple dimensions:

- **Access:** Availability of adequate devices, reliable broadband, and assistive technologies
- **Skills:** Technical, information literacy, and communication capabilities needed to use digital tools effectively
- **Support systems:** Technical assistance, training resources, and maintenance infrastructure
- **Relevant content:** Culturally appropriate and linguistically accessible digital resources
- **Agency:** The ability to meaningfully participate in digital spaces and technology development

Service-learning partnerships addressing digital equity must engage with this multidimensional understanding rather than focusing solely on technology provision.

Prevalence, Drivers, and Distribution of Digital Inequities

The digital divide persists along predictable socioeconomic, geographic, and demographic lines. In the United States, approximately 19 million Americans still lack access to broadband infrastructure at threshold speeds, with rural areas experiencing connectivity gaps at nearly three times the rate of urban areas (Federal Communications Commission, 2021). Beyond infrastructure, disparities in device access, digital skills, and technological self-efficacy create complex patterns of digital exclusion.

Key drivers maintaining these divides include:

- *Economic barriers:* The cost of devices, connectivity, and digital services
- *Geographic isolation:* Limited infrastructure investment in rural and low-income urban areas
- *Educational gaps:* Insufficient integration of digital literacy in educational systems

- *Design exclusion:* Technologies developed without consideration for diverse user needs
- *Language and cultural barriers:* Limited availability of content in multiple languages
- *Disability-related obstacles:* Inadequate attention to accessibility in digital design

The intersection of these factors creates particularly acute challenges for certain populations. Older adults, people with disabilities, low-income households, rural residents, racial and ethnic minorities, and non-English speakers face compounded barriers to digital participation (Ragnedda & Muschert, 2018).

Organizational and Individual Consequences of Digital Inequity

Organizational Performance Impacts

For organizations serving diverse populations, digital inequities create significant operational challenges and missed opportunities:

Educational institutions experience widening achievement gaps when students lack equal digital access, with research showing students without home internet access have grade point averages 0.4 points lower than their connected peers (Hampton et al., 2020). During pandemic-related school closures, districts with high percentages of unconnected students reported course completion rates 25-40% lower than well-connected districts (Aguilar, 2020).

Healthcare organizations face diminished effectiveness when patients cannot access telehealth services or digital health management tools. Research indicates that healthcare systems implementing virtual care without addressing equity concerns see 67% lower utilization rates among patients from disadvantaged communities, undermining both care quality and operational efficiency (Nouri et al., 2020).

Government agencies encounter significant barriers to service delivery when digital-only approaches exclude portions of their

constituencies. Digital-first service models without equity provisions typically reach only 45-60% of eligible participants for essential benefit programs (Horrigan, 2019).

For businesses, digital divides translate to untapped markets, limited talent pools, and missed innovation opportunities. Companies with inclusive digital strategies report 1.7 times higher customer satisfaction scores and access to 23% larger market segments (Accenture, 2018).

Individual Wellbeing and Stakeholder Impacts

At the individual level, digital exclusion produces cascading effects across multiple life domains:

- **Educational attainment:** Students without adequate digital access demonstrate 17% lower rates of homework completion and score significantly lower on standardized assessments (Hampton et al., 2020). College students lacking digital resources are 30% more likely to drop courses requiring online components (Salmerón et al., 2020).
- **Economic opportunity:** Digitally excluded job seekers face increasingly insurmountable barriers as 82% of middle-skill positions now require digital skills, with digitally skilled workers earning an average of 23% more than peers with similar qualifications but limited digital capabilities (Burning Glass Technologies, 2019).
- **Health outcomes:** Individuals without digital access show 26% lower rates of preventive care utilization and experience difficulties managing chronic conditions when unable to use digital health tools (Nouri et al., 2020).
- **Civic engagement:** Digitally excluded citizens demonstrate 28% lower rates of participation in local governance and reduced awareness of community resources and opportunities (Horrigan, 2019).

These statistics underscore that digital equity is not merely a technology issue but a fundamental social determinant with far-reaching implications for individual and community wellbeing.

Evidence-Based Organizational Responses

Co-designed Service-Learning Partnerships

Effective service-learning partnerships addressing digital equity begin with collaborative design processes that center community voice and expertise. Research indicates that co-designed initiatives demonstrate significantly higher sustainability rates and community impact than programs developed without substantial community input (Bringle & Clayton, 2021).

Key approaches include:

- Asset-based community development methodologies that identify and leverage existing community strengths
- Participatory needs assessment protocols involving diverse stakeholders in identifying priority interventions
- Shared governance structures with clear roles for academic, community, and student participants
- Layered mentorship models where experienced participants guide newcomers from both academic and community settings
- Integrated assessment frameworks measuring both learning and community outcomes

Arizona State University transformed its computer science curriculum by partnering with tribal communities throughout Arizona to address their self-identified digital needs. Rather than imposing predetermined projects, faculty and students participated in community listening sessions where tribal elders and youth identified priority areas, resulting in culturally appropriate digital preservation initiatives, telemedicine access points, and small business technology support. The partnership approach led to 85% higher

community technology adoption rates compared to previous top-down interventions and provided computer science students with unique cross-cultural competencies valued by employers (Tachine & Yellow Bird, 2022).

Comprehensive Digital Literacy Programs

Research consistently demonstrates that access interventions without accompanying skill development produce limited impact. Successful service-learning partnerships incorporate structured digital literacy components that address both foundational and advanced skills (Ragnedda & Muschert, 2018).

Effective approaches include:

- Contextualized learning modules that teach digital skills through practical, relevant applications
- Intergenerational knowledge exchange pairing students with older learners
- Multilingual, culturally responsive curricula developed with community input
- Progressive skill pathways from basic operations to creative technology use
- Peer teaching models that build community capacity for ongoing learning

Marquette University's Digital Scholarship Lab partnered with neighborhood associations and senior centers throughout Milwaukee to implement a Digital Neighbors program. Information science students develop and deliver customized digital literacy workshops while documenting neighborhood histories through collaborative digital storytelling. The program has reached over 2,000 residents across 15 neighborhoods, with participants demonstrating 76% higher digital self-efficacy scores and students reporting deeper understanding of information equity concepts. The university institutionalized the partnership by integrating it into core curriculum requirements for information

science majors, ensuring sustainability beyond initial grant funding (Williams & Johnson, 2020).

Community Technology Ecosystems

Sustainable digital equity requires more than temporary interventions—it demands the development of supportive technology ecosystems within communities. Service-learning partnerships can contribute to building these ecosystems through intentional infrastructure and support system development (Rhinesmith, 2018).

Key approaches include:

- **Community technology hub creation** providing shared access points
- **Tech support networks** offering ongoing assistance and maintenance
- **Device refurbishment and distribution programs** addressing hardware needs
- **Digital navigation services** connecting community members to available resources
- **Connectivity cooperatives** exploring community-owned internet solutions

Purdue University's Polytechnic Institute established the Digital Lifeline Initiative through partnerships with rural libraries, small businesses, and county extension offices throughout Indiana. Engineering and technology students design and implement community technology hubs, train local digital navigators, and develop connectivity solutions for unserved areas. The initiative has established 23 community technology centers reaching over 12,000 rural residents. Participating students develop specialized community technology planning skills, with program alumni launching two social enterprises focused on rural connectivity solutions. The program's sustainability model includes revenue-generating IT services for local businesses that subsidize community access points (Rhinesmith et al., 2021).

Industry-Academic-Community Collaborations

Multi-sector partnerships leverage complementary resources and expertise, creating more comprehensive and sustainable digital equity interventions. Research indicates that including industry partners significantly enhances both the technical quality and long-term viability of service-learning initiatives (van Dijk, 2020).

Effective approaches include:

- **Corporate volunteer engagement** pairing professionals with students and community members
- **Technology donation and discount programs** addressing resource constraints
- **Professional mentorship networks** connecting students and community members with industry experts
- **Career pathway development** creating bridges from educational programs to employment
- **Joint funding models** combining corporate, philanthropic, and institutional resources

Microsoft partnered with Miami Dade College and 15 community-based organizations to launch Digital Prosperity Miami, addressing disparities in the city's technology ecosystem. Computer science students work alongside Microsoft employees to provide technical support, digital skills training, and small business technology consulting to underserved neighborhoods. The program has supported over 200 small businesses, trained 1,500 residents, and connected 75 students with internship opportunities. The college integrated the partnership into its curriculum through dedicated service-learning courses, while Microsoft contributes software, technical expertise, and career development resources. Community organizations provide culturally appropriate outreach and physical space for programming,

creating a sustainable ecosystem of support (Miami Dade College, 2022).

Building Long-Term Digital Equity Capabilities

Institutionalizing Digital Equity Within Academic Structures

To move beyond isolated projects toward systematic impact, higher education institutions must integrate digital equity work into their core functions. This institutionalization creates stability, enhances academic legitimacy, and ensures resources for sustained community engagement (Bringle & Clayton, 2021).

Key strategies include:

- Embedding digital equity projects within required coursework rather than optional experiences
- Creating dedicated academic centers focused on technology justice and community engagement
- Developing tenure and promotion criteria that recognize community-engaged scholarship
- Establishing cross-departmental initiatives connecting technical disciplines with social sciences
- Integrating digital equity perspectives throughout curriculum development

By positioning digital equity as central to academic mission rather than peripheral, institutions create the conditions for sustained partnerships and deeper impact on both student learning and community outcomes.

Developing Reciprocal Knowledge Exchange Systems

Effective service-learning partnerships recognize and value the expertise that exists within communities, creating opportunities for reciprocal knowledge exchange rather than one-way service provision. This approach transforms the traditional dynamics of community engagement, positioning community members as co-educators

and co-researchers rather than merely recipients of service (Saltmarsh & Hartley, 2017).

Key strategies include:

- Incorporating community knowledge in formal curriculum and research design
- Developing community co-teaching roles within academic courses
- Creating collaborative research methodologies that center community questions
- Establishing knowledge documentation systems that preserve community insights
- Implementing recognition systems that acknowledge community expertise

This reciprocal approach not only produces more effective digital equity interventions but fundamentally transforms how knowledge is produced and valued within academic institutions.

Building Cross-Sector Digital Equity Ecosystems

Sustainable digital equity requires coordination across sectors and systems. Service-learning partnerships can serve as bridges, connecting educational institutions, community organizations, government agencies, and private sector entities around shared digital inclusion goals (Rhinesmith, 2018).

Key strategies include:

- Developing regional digital equity coalitions with diverse stakeholder representation
- Creating shared measurement systems for tracking digital inclusion metrics
- Establishing resource-sharing agreements across organizational boundaries
- Implementing coordinated advocacy efforts for supportive policy environments
- Building collective funding models that leverage multiple resource streams

These ecosystem approaches recognize that no single organization or sector can address digital equity in isolation, creating more resilient and comprehensive interventions through collaborative structures.

Conclusion

Service-learning partnerships offer a powerful approach to addressing digital equity challenges while simultaneously enhancing educational outcomes. By connecting academic learning with community needs, these partnerships create mutual benefit across sectors and stakeholders. The evidence reviewed in this article demonstrates that well-designed service-learning initiatives can produce measurable improvements in digital access, skills, and support systems while providing students with authentic learning experiences that develop both technical and cross-cultural competencies.

Successful digital equity partnerships share several key characteristics: they center community voice through co-design processes; address multiple dimensions of digital inclusion beyond simple access; build sustainable engagement models through institutional integration; and leverage complementary expertise across sectors. When these elements are present, service-learning partnerships can contribute to transformative change in both educational institutions and communities.

As the digital transformation of society continues to accelerate, addressing equity gaps becomes increasingly urgent. Service-learning partnerships represent a promising strategy for tackling these challenges, mobilizing educational resources toward community priorities while preparing students to become technically skilled, socially conscious professionals. By implementing the evidence-based approaches outlined in this article, higher education institutions, community organizations, and their partners can develop effective collaborations that advance digital equity while enhancing student learning.

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