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Alt Funding Field Guide

Building sustainable funding for digital adoption

Education

By Dr. Jen Vanek & Samantha Schartman

Connect Humanity

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The **Alt Funding Field Guide** is a series of publications produced by Connect Humanity's Alternative Funding Innovation Lab. It makes the case that digital inclusion programs create economic value across multiple sectors, and sets out how those sectors can co-invest to sustain the work.

This sector guide examines digital inclusion in K–12, postsecondary, and adult foundational education, and shows how employers, workforce boards, and education institutions can co-invest in digital readiness as shared workforce infrastructure.

All chapters can be found at connecthumanity.fund/alt-funding-guide/

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Introduction

Education institutions in the U.S. carry much of the cost of digital inclusion, including the provision of devices, software, technical support, and digital skills instruction. Meanwhile, the benefits of these investments extend far beyond the education sector, accruing to employers, workforce systems, and others, as a result of lower-training costs, more productive workers, and stronger local economies (Bergson-Shilcock et al., 2023). This chapter examines this dynamic across K–12, postsecondary, and adult foundational education, and explores how co-investment partnerships could more sustainably distribute the costs of essential digital inclusion programs.

Public investments during the COVID-19 pandemic accelerated broadband and device access, but they also left institutions with more recurring costs for maintenance, software, support, and ongoing skill development that many struggle to absorb. The misalignment creates sustainability pressures, but it also creates a rationale for shared investment.

This chapter builds toward a framework for structuring that investment. Drawing on the innovative financing approach developed by Connect Humanity, it shows how education institutions, employers, workforce boards, and community technology programs can co-invest in digital inclusion as shared workforce infrastructure. Sections 1–4 establish the evidence base. Section 5 translates that evidence into partnership models, a capital stack approach (i.e., blending of multiple sources of public, private, and philanthropic capital), and design principles for sustainable co-investment.

Section 1: The education sector

The digital inclusion ecosystem in U.S. education spans K–12, postsecondary, and adult foundational education, supporting learners across the lifespan. Together, these education sectors form an interconnected system that increasingly relies on the pillars of digital inclusion: reliable broadband, appropriate devices, digital skills, technical support, and accessible digital content (National Digital Inclusion Alliance [NDIA], n.d.). Because all elements of digital inclusion contribute to preparing learners for work and civic participation, gaps in digital inclusion have implications that extend beyond individual learners and institutions.

Digital inclusion efforts in education are widely recognized as long-term investments that strengthen communities (Jackson et al., 2024). The goal extends beyond connectivity to preparing learners for postsecondary education and employment that rely on use of digital tools. Priorities vary by education sector. In K–12 education, efforts focus on integrating digital curricula, expanding technology access, and addressing the 'homework gap' to support learning beyond school hours (U.S. Department of Education, Office of Educational Technology [OET], 2024). Postsecondary institutions focus on access to specialized technologies required for academic programs, along with the broader digital literacy needed for online and hybrid learning (Jackson et al., 2024). Adult foundational education emphasizes access, digital skill development, civic participation, and job readiness for populations historically excluded from digital opportunities (Jobs for the Future et al., 2022).

Over the past several decades, public investment has significantly expanded connectivity within educational institutions; for example, the E-Rate program subsidizes broadband and internal connections for eligible schools and libraries (Universal Service Administrative Company, 2025). Despite this progress, access to devices and connectivity remains uneven across communities, and responsibility for building digital skills and providing learner support, which is often overlooked, varies widely by education sector and location. Given the central role of digital participation in most daily tasks, understanding how digital inclusion is structured and funded in education provides a foundation for identifying gaps in access and support, informing funding decisions, and planning for sustainable, system-wide improvement.

Defining the ecosystem

In education, a digital inclusion ecosystem includes the policies, programs, infrastructure, and services that shape learners' access to affordable broadband, internet-enabled devices, digital literacy instruction, technical support, and accessible online content. The ecosystem perspective does not assume a single coordinated system. Instead, it recognizes that many distinct actors operate as interconnected parts of a broader

network with individual initiatives (e.g., nonprofit digital skills programs, school device distribution efforts, or state broadband subsidies) serving as entry points.

Traditionally, key stakeholders have included:

- **Government agencies** (federal, state, and local) that set policy, define accountability requirements, and allocate public funding
- **Educational institutions** that manage infrastructure, instructional technologies, and curriculum integration
- **Libraries, community-based organizations, and nonprofit intermediaries** that provide access points, digital literacy instruction, and technical support
- **Private-sector partners**, including internet service providers and education technology companies, that contribute infrastructure, platforms, devices, and services through discounted or targeted initiatives

These actors operate at different levels and with different mandates, but together they shape the availability and quality of digital learning opportunities across education settings. This ecosystem framing shifts attention from isolated solutions to strengthening the roles and connections among organizations that sustain digital inclusion.

Organizational and funding structures

Each part of the education sector has distinct governance structures and funding arrangements that shape how digital inclusion is planned and sustained. Funding comes from a mix of federal, state, local, institutional, philanthropic, and private sources. Institutional budgets remain the primary source of ongoing funding for core technology needs, including networks, devices, software, and IT staffing. Philanthropic organizations and nonprofit intermediaries often support pilot programs, research, and technical assistance. Private-sector partnerships may provide discounted services, devices, or targeted connectivity initiatives. These funding sources vary in scale, flexibility, and reliability, which affects how digital inclusion activities can be sustained over time.

While educational institutions carry most of the recurring technology costs, the benefits of digital inclusion (e.g., stronger workforce readiness, reduced remediation, and increased economic participation) extend beyond the institutions that fund them. This gap between who pays and who benefits contributes to long-term sustainability challenges.

K–12 Education

K–12 education is administered through local school districts under state oversight, with federal policy shaping areas such as connectivity. Districts manage broadband infrastructure, device lending programs, instructional technologies, and related professional development. While most districts now provide in-school connectivity and

some level of device access, policies for home access and family-facing support vary widely, reflecting differences in local funding capacity.

Funding comes mainly from state and local sources, with federal programs supporting targeted needs. Districts rely heavily on the E-Rate program to offset eligible connectivity costs (Universal Service Administrative Company, 2025). However, the ability to sustain broadband and device investments beyond those supports varies because local revenue sources (e.g., property taxes) differ significantly across communities.

Technology costs are embedded within general operating budgets and spread across multiple line items, including devices, software licenses, connectivity, vendor contracts, and IT staffing. This structure makes it difficult to capture the full recurring cost of digital learning in one place (EducationData.org, n.d.). As the computers provided during the pandemic age and temporary relief funding ends, these ongoing costs create increasing pressure for school districts with limited local revenue. These funding differences affect not only instructional quality but also the consistency with which students build digital skills that support later academic and workforce participation.

Postsecondary Education

Postsecondary education includes public and private colleges and universities. Responsibility for digital inclusion is spread across IT offices, teaching and learning centers, accessibility services, and academic departments. Institutions manage enterprise systems, learning platforms, digital libraries, and research infrastructure. Student access to digital resources is typically centered on campus-based systems rather than off-campus support.

Public institutions are funded through tuition, state appropriations, endowments, gifts, and Title IV student aid. Private institutions rely largely on tuition, endowments, and gifts. Title IV aid may be used for educationally related goods and services, including certain technology costs (U.S. Department of Education, Federal Student Aid [FSA], 2024). Institutions may also access state-administered broadband or digital inclusion initiatives, though availability varies (Federal Student Aid, 2024; National Telecommunications and Information Administration, 2024).

Technology is usually funded through central IT budgets and, in some cases, student technology fees. Institutions spend a median of approximately $1,601 per full-time student on central IT operations (EDUCAUSE, 2024). Many institutions report flat or declining IT budgets, limiting their ability to expand services as digital learning demand grows (EDUCAUSE, 2025). Access gaps can mean lower retention, reduced course completion, and underuse of program specific digital platforms. Katz et al. (2025) found that students with inadequate or inconsistent internet and devices were more likely to have incomplete course grades and extend their time to graduation. Because many states include performance measures such as completion or credential attainment in their higher

education funding allocations, these outcomes can carry financial implications (Education Commission of the States, 2024).

Adult Foundational Education

Adult foundational education is delivered through a network of community colleges, school districts, community-based organizations, correctional programs, and workforce agencies. The primary source of federal funding is the Adult Education and Family Literacy Act (AEFLA), part of the Workforce Innovation and Opportunity Act (WIOA), administered by the U.S. Department of Education's Office of Career, Technical, and Adult Education (OCTAE). AEFLA Title II funds support tuition-free instruction, which may include the integration of digital skills into academic programming (U.S. Department of Education, OCTAE, 2014; International Training Centre of the International Labour Organization [ITCILO], 2021). States may supplement these federal funds, but overall, resources remain limited relative to the scale of learner need.

Modest funding means that many adult education providers struggle to maintain dedicated technology budget lines. Costs related to connectivity, devices, instructional software, and professional development are typically embedded within general operating budgets (ITCILO, 2021; LINCS, n.d.). Many instructors do not receive formal preparation in digital literacy instruction and report persistent resource gaps (Jobs for the Future et al., 2022). As a result, programs often rely on external partners like libraries, community-based organizations, workforce agencies, or Digital Navigator services. These provide off-site support, including home connectivity, device setup, and account access (Jobs for the Future et al., 2022). Many adult learners enroll specifically to improve employment outcomes, and the lack of digital access and digital skill instruction has a negative effect on local workforce supply and employer readiness.

Why this matters

Understanding how governance and funding structures interact and where they fall short helps explain why the responsibilities, costs, and benefits of digital inclusion are often misaligned. Education institutions carry much of the operational cost, while employers and regional economies benefit from a digitally prepared workforce in an increasingly technology-based economy. This disconnect helps explain why digital inclusion challenges are difficult to resolve. Public investment has expanded but remains uneven and insufficient given the rapid evolution of the technologies required in schooling and at work; more importantly, the expense is disproportionately concentrated in schools rather than shared across the systems that depend on digitally skilled students and workers. Section 2 builds on this foundation by examining how these structural conditions shape participation, resource use, and workforce alignment.

Section 2: Where digital inclusion affects value

While Section 1 described the structure and funding of the education digital inclusion ecosystem, this section examines how digital infrastructure and inclusion function within that ecosystem to create or constrain value. Digital infrastructure alone does not generate educational value, which only emerges when paired with digital skills, ample technical assistance for learners, and instructional practices that integrate technology into academic and workforce preparation goals (OECD, 2023; U.S. Department of Education, OET, 2024). If these are misaligned, instruction is disrupted, opportunities to apply digital skills are missed, and access to technology-mediated learning experiences are uneven. Over time, these gaps accumulate, and many learners exit education without the academic and digital competencies required for well-paid employment.

Participation, persistence, and reach

Across education sectors, digital capacity creates value by enabling learners to engage fully in each setting. In K–12 systems, reliable home access allows students to complete assignments and engage on online platforms. In postsecondary education, access to and skilled use of industry-specific and program-related technologies enable students to succeed in coursework that mirrors professional environments. In adult foundational education, digital access and digital skills support flexible instructional models that allow learners to balance work and family responsibilities while progressing toward educational and employment goals (Jobs for the Future et al., 2022; ITCILO, 2021).

For learners across these sectors, sustained participation in technology-mediated instruction provides repeated exposure to digital tools, workflows, and communication practices that increasingly characterize postsecondary and workplace environments. When participation is uneven or interrupted, learners have fewer opportunities to build and apply these skills, limiting both educational progress and preparation for subsequent transitions. Whereas with consistent participation, learners can build the skills to feel confident using digital tools they encounter. In this way, digital inclusion expands institutional reach while shaping the conditions under which learners gain skills relevant to the workforce.

Cost avoidance and protecting investments

Digital inclusion creates value by reducing inefficiencies and avoiding costs that arise when learners cannot fully access or use technology. When learners lack home connectivity or digital skills, educators and staff spend time troubleshooting instead of teaching, and institutions rely on workarounds that weaken the impact of technology investments (State Educational Technology Directors Association [SETDA], 2025; EDUCAUSE, 2023; Vanek & Harris, 2022). For example, a hypothetical teacher earning

approximately $65,000 annually (about $30 per hour) who spends one hour per week on basic technical troubleshooting during a typical 40-week instructional year represents an opportunity cost of roughly $1,200 per year/teacher. In less connected environments, indirect costs are likely to be higher, compounding digital exclusion and inequities.

Digital skills as workforce infrastructure

Beyond supporting participation and learning, digital skills developed in education now serve as basic workforce skills. Most jobs require regular use of digital tools and systems, yet many workers lack foundational digital skills (Bergson-Shilcock et al., 2023). When digital skill development is inconsistent or peripheral, learners graduate without the competencies needed for postsecondary pathways or middle-income employment. These gaps shift costs downstream, especially in low-unemployment economies, as employers and workforce systems must invest in additional onboarding, basic digital training, or remediation. Treating digital skills as core rather than supplemental educational infrastructure helps align learning experiences with labor market realities while reducing avoidable burdens on employers and workforce intermediaries.

Section 3: Outcomes and ripple effects

Building on the value creation described in Section 2, this section synthesizes how digital inclusion outcomes appear across education sectors and generate ripple effects beyond individual learners.

Sector-level outcomes

Across K–12, postsecondary, and adult foundational education, digital inclusion supports improved continuity of learning and participation, particularly in digitally mediated or hybrid environments (SETDA, 2025; OET, 2024). Additionally, it supports more effective use of instructional technologies, reducing underutilization of licensed platforms and devices (EDUCAUSE, 2023). Finally, it improves persistence and completion outcomes, especially for learners balancing work, caregiving, or geographic constraints (Digital Promise, 2024; Vanek & Harris, 2022). These outcomes are most pronounced where digital access, skills instruction, and learner-facing support are aligned with core instructional systems.

Organizational and budgetary effects

At the organizational level, strong digital inclusion means fewer last-minute fixes and workarounds. When learners have reliable connectivity and digital skills, staff spend less time solving connection problems, helping people log in, reprinting materials, or creating accommodations. When students know how to use learning platforms and other campus technologies, there is less need for help-desk support which helps courses run more smoothly (EDUCAUSE, 2023). These improvements may not lower overall budgets, but they make better use of existing resources. When less time and money are spent fixing problems, more can be directed toward instruction and student success.

Workforce and community ripple effects

National data show that digital skill gaps are widespread and limit access to many middle-income jobs. Thirty percent of U.S. adults lack basic digital skills even though a large majority of jobs now require them, contributing to talent shortages across sectors critical to economic resilience, including AI, cybersecurity, and advanced manufacturing (Bergson-Shilcock, 2023). These gaps reflect system-level underinvestment in digital skill development and workforce pathways. This means education investments do not reach their full return, workforce entry slows, economic participation is constrained, and productivity suffers.

When learners leave education with strong digital skills, they are better prepared to use technologies, reducing the need for remedial training and extended onboarding by

employers (ITCILO, 2021). Recruitment, onboarding, and job-specific training already require substantial employer investment, often several thousand dollars per employee. These costs increase when workers lack foundational digital skills (Society for Human Resource Management, 2023; Bergson-Shilcock et al., 2023). At the community level, strong digital inclusion in education can support higher household broadband use and better access to online public services. Table 1 brings together these sector-level outcomes, organizational effects, and broader workforce and community impacts.

Table 1. Sector outcomes, ripple effects, and downstream impacts

Sector	Direct Sector Outcomes	Ripple Effects	Downstream Impacts
K–12 Education	- Learning continuity - Better alignment between school and home learning *(SETDA, 2025; OET, 2024)*	- Fewer instructional disruptions - Improved technology planning - Staff time redirected to instruction *(SETDA, 2025)*	- Reduced reliance on public assistance - More home broadband adoption *(NDIA, 2025)*
Postsecondary Education	- Access to online courses - Improved use of program-specific technologies *(EDUCAUSE, 2023; Digital Promise, 2024)*	- Less demand for reactive help-desk support - Stronger IT instruction coordination *(EDUCAUSE, 2023)*	- Graduates better prepared to use workplace technologies - Less basic remediation *(Digital Promise, 2024)*
Adult Foundational Education	- Increased persistence - Digital skills aligned to workforce goals - Flexible programming *(ITCILO, 2021; Jobs for the Future et al., 2022; Vanek & Harris, 2022)*	- More efficient use of limited resources - Improved scalability – More learners served *(Vanek & Harris, 2022)*	- Improved workforce navigation and employability - Expanded access to digital public services *(NDIA, 2025; ITCILO, 2021)*

Section 4: The cross-sector case

Sections 2 and 3 explain how digital inclusion supports participation in education, improves institutional operations, and prepares individuals for work and civic life. This section examines what those outcomes imply for how digital inclusion is supported in practice, requiring coordination across schools, colleges, adult education programs, employers, and community partners, particularly where funding is stretched.

Benefits and partnership opportunities

As shown in Table 1, the benefits of digital inclusion extend beyond education systems to employers, workforce systems, and communities. Learners' access to devices, connectivity, and digital skill development outside education settings (e.g., at home, work, and in community spaces) plays a critical role in shaping outcomes. As a result, partnerships across sectors can extend the impact of existing education investments and better align resources with learner needs.

Schools and colleges can partner with libraries, community-based organizations, and workforce agencies to provide device access, connectivity support, and digital navigation beyond the classroom. These partnerships help reinforce learning continuity and reduce barriers that institutions cannot address alone. Partnerships with technology companies and internet providers can further align discounted services and workforce tools with education and training pathways, enabling institutions to make more effective use of the infrastructure they already support (SETDA, 2025).

Employers represent another important and underutilized partner. Employers that participate actively in digital access and skill development can help reduce future training costs while strengthening local talent pipelines. Ohio's TechCred program illustrates a potential co-investment model. Employers apply for funding and pay for approved technology-focused training and credentialing costs. The state then reimburses employers up to $2,000 for each credential successfully earned by an employee. Employers may also request that new credentials be added to the approved list, helping align publicly supported training with evolving workforce needs. This arrangement distributes the costs of digital skill development across employers and the state while responding to employer demand (Ohio TechCred, 2022).

Additional examples point to emerging models of cross-sector coordination. The Employer Network Advancing Digital Skills and Equity (ENADSE), convened by Digital US, brought together companies across industries to strengthen workforce digital skill pipelines, share effective practices, and align employer investments with community digital inclusion efforts. Such coalitions support collaborative strategy, shared resources, and co-investment in training that builds foundational and occupational digital skills

(Digital US, n.d.). For example, network member McDonald's has supported workers' digital skill development through internal training, gamified learning, and emerging credentialing pathways, illustrating how employers can contribute to developing digital readiness rather than solely benefiting from it (Digital US, n.d.).

Intermediary organizations also play a key role. The nonprofit Per Scholas, for example, connects graduates to technology roles through employer advisory relationships, hiring partnerships, and curriculum alignment, while helping companies reduce recruitment and onboarding costs (Per Scholas, 2024). When benefits are shared across sectors, partnerships can extend the reach and effectiveness of digital inclusion efforts.

Shared workforce infrastructure

Table 1 showed that digital inclusion produces effects at multiple levels: direct outcomes for learners, organizational improvements within institutions, and broader impacts across workforce systems and communities. When digital inclusion is strong, these benefits are widely distributed. Equally, when it is weak, costs shift outward to employers, workforce systems, and public services. Employers may face higher onboarding and remedial training costs; workforce systems may experience increased demand for support; and communities may see reduced labor force participation (Bergson-Shilcock et al., 2023; NDIA, 2025). Even within education, limited digital access can increase demand for support services and reduce the efficiency of systems (EDUCAUSE, 2023).

Digital inclusion functions as shared workforce infrastructure, encompassing both the costs of providing access and skill development and the benefits of a digitally prepared population. In practice, however, these costs are largely borne by education systems while the benefits extend more broadly. When education systems, employers, and other stakeholders align their contributions to more accurately reflect these shared benefits, digital inclusion efforts are more likely to be sustained and scaled. Co-investment models — whether through employer-supported training, public–private partnerships, or coordinated funding strategies — offer a way to better match costs with benefits. That way digital inclusion becomes a shared investment in workforce readiness, economic participation, and community well-being, rather than just an educational expense.

If digital readiness is a shared economic good, then sustaining it requires more than infrastructure expansion alone; it calls for coordinated investment that aligns market incentives with the ongoing institutional costs of supporting learners.

Section 5: An education capital stack

Sections 1–4 showed that digital inclusion in education generates value beyond the classroom, strengthening participation, institutional effectiveness, and workforce readiness. This section shifts from analysis to action by outlining how digital inclusion can be financed more effectively by building co-investment partnerships.

It applies a financing framework developed by Connect Humanity that, rather than starting with available funding sources and designing programs to fit them, begins with the uses of capital, that is, the specific needs of learners and institutions. It then identifies the repayment streams created by those investments (i.e, who benefits and in what measurable ways), and only then determines the most appropriate mix of funding sources. This sequence, Uses → Repayments → Sources, reframes digital inclusion from a charitable expense into a shared investment. It also helps target limited grant funding to areas where market-based returns are unlikely, rather than spreading those funds thinly across all needs.

Applying the framework

Applying this framework to education yields a three-layer capital stack: a multi-source funding approach that links program design to long-term financial sustainability. Its application to digital inclusion in education is still emerging; the model described below is illustrative rather than based on a single real-world example.

Uses of capital are the activities and services that directly support digital inclusion: device programs, Digital Navigator services, digital skills instruction, home connectivity support, access to specialized industry technologies, and technical assistance for learners across K–12, postsecondary, and adult foundational education. These are the needs of the community. Defining them precisely is the essential first step, including identifying specific populations served, intervention types, and budget estimates.

Repayment streams are the measurable economic value generated when those uses are funded. The education sector produces several distinct repayment streams, each accruing to a different beneficiary:

- **Employers save on onboarding and remedial digital training.** National data suggest these costs run several thousand dollars per employee when workers lack foundational skills (Society for Human Resource Management, 2023; Bergson-Shilcock et al., 2023). Employers who co-invest in upstream digital skill development can reduce these downstream costs.
- **Postsecondary institutions protect tuition revenue through stronger retention.** When digital access and navigation support reduce ‘stop-outs’ and incomplete grades, the revenue associated with those credit hours is preserved. States that use performance-based funding formulas amplify this effect.

- **K–12 districts reduce instructional disruption costs**. When reliable home access eliminates the homework gap, staff time spent on workarounds and troubleshooting is recovered and redirected to instruction.
- **Workforce boards and WIOA-funded programs improve employment placement rates and earnings outcomes.** These performance metrics determine future federal and state allocations. Digital inclusion investments that improve these metrics create a direct funding return.
- **Healthcare systems, transit agencies, and other public service providers benefit from a more digitally capable population.** End users can navigate online services, reducing administrative burden and improving service uptake.

Sources of capital are the mix of funding types informed by the repayment potential identified above. When repayment potential is high (e.g., employer savings from workforce-aligned adult education), the case for employer co-investment or performance-based contracts is strong, and grants serve as a de-risking layer rather than the primary source. When repayment is modest or long-term (e.g., foundational K–12 access in low-income communities), philanthropic and public grant capital fills the gap. The sources layer includes:

- **Employer co-investment** through curriculum alignment agreements, equipment contributions, advisory board commitments, and direct program funding, particularly in postsecondary and adult foundational education where workforce outcomes are proximate.
- **Performance-based contracts** with workforce boards and WIOA-funded agencies, where payment is tied to employment placements, credential attainment, or earnings.
- **Institutional shared budgeting** in which the costs of digital inclusion are distributed across the many departments that benefit (e.g., student services, advising, accessibility, and academic affairs) rather than concentrated in IT.
- **E-Rate and federal grant programs** as a stable de-risking layer, used strategically to underwrite the infrastructure that private and employer co-investment requires.
- **Philanthropic and impact capital** targeted to the communities where the economics are weakest, allowing other sources to flow to places with stronger repayment potential.

Table 2. Education digital inclusion capital stack by sector

Sector	Primary Uses	Repayment Streams	Recommended Sources
K–12	Devices, home connectivity, Digital Navigators, digital literacy for families	Reduced instructional disruption; recovered staff time (~$1,200/teacher/year); household broadband adoption	E-Rate; state/local grants; library partnerships; ISP affordability programs; philanthropic capital

Sector	Primary Uses	Repayment Streams	Recommended Sources
Postsecondary	Digital navigation, device support, platform access, embedded technology support	Protected tuition revenue from improved retention; reduced help-desk cost; employer savings on onboarding	Employer co-investment agreements; shared institutional budgeting; performance-based state funding; Title IV aid
Adult Foundational Education	Digital skills instruction, workforce-aligned training, device and connectivity support	Employer onboarding savings (~$3,000–$5,000/hire); WIOA performance outcomes; reduced public assistance reliance	WIOA performance contracts; employer co-investment; workforce board funding; philanthropic capital for hardest-to-reach

Trusted intermediaries as co-investment partners

The capital stack framework depends on trusted intermediaries, often community-based organizations.This is the organization or network that converts infrastructure access and financial co-investment into actual participation and skill development. It is the 'believability layer' responsible for vetting partner interests, ensuring community needs remain central, and delivering the measurable outcomes that make repayment streams credible.

Community technology programs like Digital Navigator networks, library-based digital inclusion programs, and nonprofits like Tech Goes Home (Tech Goes Home Chattanooga, n.d.), already play this role. Library-led Digital Navigator programs, like the Salt Lake City Public Library, similarly provide one-on-one help with internet enrollment and device setup (NDIA, 2025). These organizations help learners complete enrollment applications, interpret eligibility rules, stabilize device and connectivity access, and provide the ongoing human support that infrastructure expansion alone cannot deliver (van Dijk, 2006; Kotrlik & Redmann, 2005; Rosen & Vanek, 2017).

What is missing in most current arrangements is a formal, funded partnership structure that positions these organizations as co-investment partners rather than service subcontractors. The gap is not in the existence of these partnerships, but in their sustainability. Many community technology programs remain funded through short-term grants disconnected from the repayment streams they generate. Applying the capital stack framework transforms them from grant-dependent programs into co-investment partners with a funded, measurable role.

This means:

- **Defining the intermediary role** explicitly in partnership agreements: who provides digital navigation, to whom, in what settings, and against what outcome metrics.
- **Tying funding to measurable outcomes** that the intermediary controls (e.g., enrollment completion rates, device adoption and retention, digital skill assessment gains, or employment placement rates) so performance-based capital can flow.
- **Sharing data across partners** so that each funder can see the return on their investment in the terms that matter to them: the employer sees onboarding cost reduction, the college sees retention improvement, the workforce board sees WIOA performance gains.

Tech Goes Home Chattanooga provides an example of a multi-partner digital inclusion initiative. The program coordinates digital skills training, device access, and connectivity support through partnerships with schools, libraries, nonprofits, and other community organizations. While Tech Goes Home is not structured as a formal co-investment financing model, it illustrates how such a model might operate: school systems, employers, libraries, and other stakeholders could contribute resources in proportion to the benefits they expect to receive, while an intermediary organization coordinates services and tracks shared outcomes.

Industry participation and co-investment

There is already some industry participation in digital inclusion. Co-investment in training programs, curriculum alignment, or equipment can increase the pool of qualified applicants and reduce future onboarding costs.

In other cases, companies participate because expanding access also supports their core business. As the Telecommunications chapter outlines, internet service providers benefit when more households can connect, expanding their customer base and improving their profitability. That is why Comcast started an Internet Essentials program that offers low-cost broadband, discounted devices, and community Wi-Fi partnerships with schools and nonprofit organizations.

However, expanding infrastructure does not automatically produce participation. Internet service providers design access programs for scale, not necessarily for helping individuals navigate enrollment. Research shows that digital inequality includes differences in skills, confidence, and social support, not just infrastructure (van Dijk, 2006). Adult education research similarly finds that advising, intake systems, and ongoing supports shape who is able to participate and persist (Patterson & Song, 2018; Pickard, 2021). As a result, education programs and community partners often act as intermediaries, helping learners complete applications, interpret eligibility rules, and stabilize access (Kotrlik & Redmann, 2005; Rosen & Vanek, 2017). Market-based initiatives

may expand infrastructure for business reasons, but intermediary institutions convert that access into sustained and more equitable participation.

Co-investment in postsecondary training

Not all industry participation is about internet access or mitigating basic digital skill gaps. In some fields, the primary challenge education institutions face is the high cost of equipment and technology. Advanced manufacturing and healthcare rely on digital systems embedded in industrial automation, robotics, diagnostics, and clinical information systems. Maintaining simulation labs, industrial robotics, and digital diagnostic equipment requires ongoing capital investment that many colleges cannot sustain alone.

Toyota illustrates a well-structured co-investment model. Facing limited pools of applicants able to operate robotics, automation systems, and digitally controlled production equipment, the company developed the Advanced Manufacturing Technician (AMT) model. The program combines paid, work-based learning with community college instruction in advanced manufacturing technologies. In 2019, Toyota transitioned national leadership to The Manufacturing Institute, which now administers the Federation for Advanced Manufacturing Education (FAME) network (Toyota Motor North America, 2019; The Manufacturing Institute, n.d.).

Through the AMT/FAME model, employers collaborate with community colleges to align curriculum, provide access to industry-standard equipment, and hire graduates into high-skill technical roles. The result is a shared benefit: employers lower onboarding costs and improve workforce readiness, while colleges modernize labs and expand access to advanced technological environments. This demonstrates the capital stack model, with the uses (curriculum modernization, equipment access) funded by the sources (employer co-investment) because the repayment streams (onboarding savings, talent pipeline) are clearly identified and quantified.

In healthcare, Kaiser Permanente has responded through partnerships with community colleges and workforce organizations to strengthen allied health training pathways aligned to technology-enabled care delivery (Kaiser Permanente, n.d.). These partnerships align curriculum with current clinical systems, expand access to work-based learning, and support program modernization in high-demand fields. Colleges expand access to technology-aligned healthcare careers. The result is a shared benefit structured around a shared repayment logic.

Typology of partnership structures

Drawing on the capital stack and the examples above, the following typology describes three partnership structures that education institutions, community technology programs, and sector partners can use as starting templates. These are not mutually exclusive; a

well-functioning regional digital inclusion ecosystem will typically combine elements of all three.

Table 3. Partnership structure typology for education digital inclusion

Structure	Primary Partners	Repayment Logic	Example
Curriculum-alignment partnership	Employer ↔ community college or adult ed program	Employer funds curriculum updates and equipment access; gains a trained talent pipeline and lower onboarding costs	Toyota/FAME; Kaiser Permanente allied health; Per Scholas employer partnerships
Digital navigator co-investment agreement	Employer or workforce board ↔ community tech program ↔ education institution	Multiple funders each contribute based on their repayment stream; intermediary delivers navigation and training services and reports shared outcome data	Tech Goes Home; library-based Digital Navigator networks; ENADSE employer coalition investments
Device lifecycle co-investment model	ISP or employer ↔ school/college ↔ community nonprofit	Upfront device capital repaid through subscriber revenue share, employer contribution, or institutional cost avoidance; nonprofit manages distribution and digital navigation	Connect Humanity's proposed device access financing model adapted for education settings

An outcomes-based model for adult foundational education

Adult foundational education offers the clearest case for outcomes-based co-investment because the line from digital skills instruction to workforce entry is direct and measurable. A practical model for this sector works as follows:

- **A workforce board or employer consortium** contracts with an adult education provider and a community technology program to serve a cohort of learners.
- **The contract specifies outcomes** that trigger payment: a defined percentage of learners completing a digital literacy assessment at a target level, followed by employment placement within a defined period. This is the repayment trigger.
- **The community technology program** provides digital navigation, device support, and home connectivity assistance as a funded intermediary — not a subcontractor but a co-investment partner with outcome accountability.
- **Philanthropic or public grant capital** de-risks the arrangement for the employer or workforce board, covering the startup costs of cohort enrollment and baseline assessment before performance payments begin.
- **Shared outcome data** reported through WIOA performance systems (National Reporting System [NRS], Employment and Training Administration [ETA]) and local

administrative records provides the measurement infrastructure each partner needs to validate their return on investment.

This model is consistent with how WIOA already structures accountability for adult education providers, simply extending that accountability to a broader set of co-investors and uses blended capital to make the economics work for all parties.

Design principles

Across these models, several design principles emerge:

- **Begin with uses, not sources.** Define the community's digital inclusion needs before identifying funders. The capital stack should follow the program design, not the other way around.
- **Name the repayment streams explicitly.** Every partner should be able to articulate, in financial terms, what they gain when the program succeeds. Vague appeals to shared values do not sustain co-investment; quantified returns do.
- **Position community technology programs as co-investment partners.** The intermediary role is not a service delivery add-on—it is the mechanism that converts investment into measurable outcomes. Fund it accordingly.
- **Use grants as a de-risking layer, not a default.** Scarce philanthropic and public grant capital should be targeted to the communities where private co-investment cannot reach, and used to underwrite the startup costs that make performance-based capital possible.
- **Build shared data infrastructure.** Without shared metrics and outcome tracking, co-investment cannot be sustained. Measurement is not just a reporting obligation, it is the foundation of the repayment case.
- **Design for iteration.** The capital stack is not a one-time plan. As outcomes data accumulates, the mix of sources, uses, and repayment structures should be revisited and refined.

Section 6: Metrics for partnership

Identifying the right partners and structuring the right agreements requires knowing when a given institutional metric signals that digital inclusion investment is insufficient and which partner has a financial interest in correcting it. Table 4 reframes the core accountability metrics tracked by education institutions as partnership trigger conditions. When a key performance indicator (KPI) falls below a threshold, it identifies both a program design gap and a co-investment opportunity.

Table 4. Core sector KPIs as partnership triggers for digital inclusion co-investment

Core KPI	Digital Inclusion Impact	Partnership Trigger	Likely Co-Investor	Relevant Data Sources[1]
Enrollment & Retention (Adult Ed, Postsecondary)	Learners with device access, broadband, and digital navigation are more likely to enroll and persist; reduced early withdrawals protect performance-based funding	Declining retention rates or rising stop-out rates signal digital access gaps; lost tuition revenue quantifies the institutional stake	Post secondary institutions; workforce boards	IPEDS; NRS (NRSWeb); National Student Clearinghouse
Academic Performance / Skill Attainment (K–12, Adult Ed)	Reliable home access and digital skill support improve learning continuity, platform usage, and assignment completion	Declining assessment scores in digitally-mediated subjects signal homework gap or skills gap; districts and nonprofits each have a stake	K–12 districts; libraries; community technology programs	NAEP; State SLDS; Northstar Digital Literacy Assessment
Workforce Outcomes & Credentialing (Postsecondary, Adult Ed, Workforce Programs)	Embedding foundational digital skills into training pathways improves credential attainment and readiness for technology-mediated jobs	Employer complaints about digital skill gaps in new hires, or rising onboarding costs, signal upstream gaps that co-investment can address	Employers; workforce boards; WIOA- funded programs	WIOA Performance Reports (ETA/OCTAE); BLS QCEW; State LMI offices

[1] Acronyms: IPEDS = Integrated Postsecondary Education Data System; NAEP = National Assessment of Educational Progress; SLDS = Statewide Longitudinal Data System; BLS QCEW = Bureau of Labor Statistics, Quarterly Census of Employment and Wages; LMI = Labor Market Information.

This table functions as a diagnostic tool. When practitioners sit down with potential co-investors, they can point to specific KPI trends in their region, translate those trends into financial terms, and connect each partner to the repayment stream that is most relevant to their organization. This is the 'translation' work that the innovative financing framework identifies as essential, bridging the language of community need and the language of institutional or business value creation.

Using data to demonstrate value

Because national systems are limited, much of the strongest evidence comes from local administrative data. Institutions often already collect information that can show how digital inclusion affects participation and efficiency. Useful local data sources include:

- **Platform usage records** (e.g., LMS login frequency and timing)
- **Device and hotspot distribution lists** linked to attendance or completion
- **Digital navigation service logs** documenting support requests
- **Access assessments** for students and families
- **Operational indicators** such as help-desk ticket volume or staff time spent troubleshooting

Analyzed carefully, these data can show how digital inclusion stabilizes enrollment, reduces disruption, and improves use of technology investments. These operational improvements can be translated into financial terms, such as retained tuition revenue, reduced remediation, or more efficient staff deployment, which make the co-investment case to potential partners.

Employer co-investment in data systems

Employers benefit from digitally prepared graduates. They therefore have a stake not only in supporting digital readiness efforts but also in strengthening the data systems that measure workforce outcomes. Employer co-investment can include participation in shared accountability strategies and outcome tracking that connect education inputs to labor market results. Improved data alignment makes it easier to demonstrate how upstream digital inclusion investments affect downstream employment outcomes. In this way, measurement infrastructure becomes part of shared workforce infrastructure and is essential for sustaining cross-sector investment.

Conclusion

Digital inclusion in education is no longer a narrow question of devices and connectivity. It is a structural condition that shapes how institutions function, how learners persist, and how effectively education systems prepare people for work. Across K–12, postsecondary, and adult foundational education, digital access and digital skills influence participation, protect technology investments, and determine whether learners exit programs ready for middle-income jobs in digitally-dependent labor markets.

This chapter has shown that the benefits of digital inclusion extend well beyond education institutions. Employers gain workers who require less remedial training and reach productivity more quickly. Workforce systems operate more efficiently. Communities experience broader digital participation. Yet the recurring costs of sustaining digital infrastructure and learner-facing support remain concentrated within education budgets.

That structural misalignment is both the central challenge and the central opportunity. The innovative financing framework provides a practical path forward: by beginning with the uses of capital (what communities actually need), identifying the repayment streams (who benefits and how), and then designing the sources of capital to match, digital inclusion can be funded as the shared infrastructure it truly is.

Community technology programs are the trusted intermediary that make this work. They convert infrastructure access and financial co-investment into actual participation and measurable outcomes. Positioning them as co-investment partners with defined roles, outcome accountability, and funding that reflects their value, is the structural change this sector needs.

The partnership typology, capital stack framework, and KPI trigger table in this chapter are designed to give practitioners the tools to make that case in the language of each potential co-investor, backed by the evidence each partner needs to justify their contribution. The choice is not whether digital inclusion matters. It is whether funding responsibility will evolve to match the value it creates. With the right framework, it can.

> *Inverting the capital stack changes the conversation from "How much can we get?" to "How much value can we create?" It can transform digital inclusion from a charitable expense into a sustainable investment for the entire community.*
>
> — Brian Vo, Connect Humanity, *Alt Funding Field Guide* framework chapter

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Get in touch
If you are a practitioner exploring co-investment partnerships, a sector partner thinking about how this framework applies to your organization, or a funder considering supporting pilots, let's talk: **info@connecthumanity.fund**

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