CRITICAL CONNECTIONS

Funding HBCUs' Digital Infrastructure
Is Essential for Meeting U.S. College Completion Goals

COMPLETE COLLEGE AMERICA

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Complete College America (CCA) builds movements for scaled change and transforms institutions. Specifically, CCA drives systemic change that leads to better college completion rates; more equitable outcomes; and greater economic and social mobility, especially for historically excluded students. CCA operates at the federal, state, and institutional levels and works with its national network of forward-thinking state and higher education leaders. Since its founding in 2009, CCA and its network have introduced bold initiatives that help states and institutions implement data-driven policies, student-centered perspectives, and equity-driven practices.

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It's Time to Stop Expecting HBCUs to "Do More With Less"

Historically Black Colleges and Universities (HBCUs) have been doing more with less for more than 150 years. Despite chronic underfunding, these institutions are engines of economic mobility for historically excluded students. When all variables are held constant, the graduation rate of Black students is 11 percentage points higher at HBCUs than at other colleges and universities.[1] In addition:

- HBCUs represent 2 percent of all undergraduate institutions, but they graduate more than 7 percent of Black college students.[2]
- HBCU graduates represent 40 percent of Black members of Congress, 13 percent of Black CEOs, 40 percent of Black engineers, and half of Black lawyers.[3]
- Close to 19 in 20 HBCU students receive financial aid, and more than half are first-generation students. Yet HBCUs provide a better return on state appropriations. When all other variables are held constant, HBCUs graduate more Black students per dollar relative to other institutions.[4]

HBCUs' Track Record of Success

The online Appendix provides a comprehensive, easy-to-sort listing of HBCUs' time to credential, retention rates, graduation rates, and graduation rate changes.

HBCUs have achieved this success because they create a sense of belonging in a culturally affirming environment, and they provide an unparalleled level of student engagement and support. But now HBCUs must adapt their model to the post-pandemic world in which all colleges operate, which is increasingly online and driven by artificial intelligence (AI).

Colleges and universities across the country must make significant capital investments to meet today's digital demands. But this challenge is more complex for HBCUs than for predominantly White institutions (PWIs) for two interconnected reasons:

1. HBCUs' excellence depends on deep interpersonal connections—among students, between students and faculty, and in the community as a whole. Now HBCUs must develop ways to foster these robust connections online.
2. HBCUs have long faced dramatic differentials in both operational and capital funding relative to PWIs—differentials that continue today. The historical inequities in capital funding have created infrastructure gaps, including the acquisition and setup of technology needed to meet today's digital demand.

Thus, HBCUs must execute a more challenging technology pivot with fewer capital and personnel resources. In fact, HBCUs' greatest capital needs are related to upgrading and expanding their digital learning infrastructure so they can maintain their track record of excellence and their high completion rates.

It is time to increase appropriations for HBCUs so that they can finally receive their fair share of higher education dollars. Increased capital funding will allow HBCUs to invest in technology to maintain the structured, supported, superior student experience that leads to higher completion rates. It will allow HBCUs to offer programs of study that are relevant and ready for a virtual world of machine learning, AI, and large language models. Appropriate levels of funding will allow HBCUs to develop models of online support and connection—models that lead to higher completion rates—so other institutions can learn from and adopt them.

> HBCUs must execute a more challenging technology pivot with fewer capital and personnel resources.

CCA's DLI Initiative: Co-Designing the Future of Digital Learning With Six HBCUs

Complete College America's (CCA) recommendations in this report are informed by extensive and collaborative work with HBCU stakeholders. Through the Digital Learning Infrastructure (DLI) Initiative, CCA worked with six HBCUs to co-design the future of digital learning.

The DLI Initiative envisioned how HBCUs can maintain excellence while responding to the increasing demand for digital learning. Specifically, the DLI Initiative looked at how HBCUs—and other colleges and universities—can use technology to enhance all aspects of the student experience, from academics and engagement to wellness and support.

Participants included six HBCUs—Coppin State University, Langston University, Mississippi Valley State University, Virginia State University, Wiley College, and Xavier University—as well as an HBCU Institutional Advisory Council and an HBCU Student Advisory Council. The initiative also incorporated insights from surveys and focus groups that involved a broader group of participants, including more than 30 HBCUs, Historically Black Community Colleges, and organizations.

The initiative looked at HBCU practices in the context of their extraordinary track record and their digital needs moving forward. One key finding of this work was that HBCUs are successful, in part, because they effectively use the proven strategies that are embedded in CCA's Pillars of Transformation. Digital learning infrastructure, in particular, is most closely tied to the Purpose and Support pillars.

Historically Black, Digitally Forward provides more information about the DLI Initiative and its findings.

CCA PILLARS OF TRANSFORMATION

PURPOSE

Aligning the college experience to each student's goals for the future

- First-Year Experience
- Career Exploration
- Academic & Career Alignment
- Adult Learner Engagement

STRUCTURE

Building course road maps that make the path to a degree or valued workplace credential clear

- Math Pathways
- Meta Majors
- Academic Maps & Milestones
- Smart Schedules
- Stackable Certificates & Credentials

MOMENTUM

Designing multiple avenues for students to get started, earn credits faster, and stay on track to graduate

- Credit for Competency
- Multiple Measures
- Corequisite Support
- Dual Enrollment
- 15 to Finish/Stay on Track

SUPPORT

Addressing student needs and removing barriers to academic success

- Active Academic Support
- Proactive Advising
- 360° Coaching
- Student Basic Needs Support

Despite HBCUs' Success, Their Funding Lags Behind Funding for PWIs

The funding discrepancy between public HBCUs and PWIs began before the advent of racial integration and continues today.[5] Capital funding varies significantly from state to state, in terms of both total state funding dollars and amounts allocated to public HBCUs relative to public non-HBCUs.

In 2022, the most recent year of publicly available data, state-by-state capital funding was a bit more consistent than it was in 2021, but differences among states were still significant. As a result, funding for HBCUs must dramatically increase to redress a century of underfunding. Disparities in funding are evident in both data and court cases.

Data Related to Capital Funding for Public HBCUs

States allocate more funding for capital projects in higher education than for funding to any other sector.[6] In 2021, 12 percent of total state appropriations went to higher education capital projects—an amount larger than that appropriated for research, agricultural extension, medical schools, and hospitals. Funding for higher education capital projects also exceeds funding for state financial aid programs for students attending public institutions.[7]

This allocation, however, varies across states.

Figure 1 (page 6) shows capital appropriations for the 14 states that provided capital funding to both public HBCUs and public non-HBCUs in 2022. Figure 2 (page 6) shows capital appropriations for the five other states, plus Washington, DC, that have public HBCUs. The remaining 31 states do not have public HBCUs.

As shown in Figures 1 and 2, the disparities between HBCUs and non-HBCUs in capital appropriations per student vary significantly. These figures make two important points about capital appropriations to public colleges and universities:

1. Funding varies dramatically from state to state.
2. Among the 14 states that provided capital funding to both HBCUs and non-HBCUs, four states—MS, NC, TN, and VA—gave more funding to non-HBCUs even though their per student capital funding exceeded the national median. In addition, four states provided capital appropriations to only non-HBCUs, and the per student capital funding of one of those states exceeded the national median.

A third point is not shown explicitly, but it is important for understanding and addressing the need for change:

3. Variability in the two data points shown in Figures 1 and 2—per student state capital appropriations and capital appropriations to HBCUs compared with non-HBCUs—do not correlate to other factors, such as state partisan politics, operating budget dynamics, historical capital appropriations, or college attainment.

Thus, despite the consistent, nationwide success of HBCUs in graduating Black students, capital appropriations for HBCUs are uneven and insufficient to allow these institutions to overcome funding gaps that have accumulated throughout the past century. Thus, both colleges and policymakers can benefit from ongoing conversations that shed light on the past, current, and future funding needs of HBCUs—and that lead to actions that address these needs.

Operating and capital funding for HBCUs, relative to PWIs, has been historically inequitable, and in some cases, the disparities have been illegal. However, while operating costs tend to be well known, less attention has been paid to capital funding, which states allocate separately from annual operating funding.

2022 Per-Student Capital Appropriations for Public HBCUs and Non-HBCUs

FIGURE 1

States That Fund Both HBCUs and Non-HBCUs

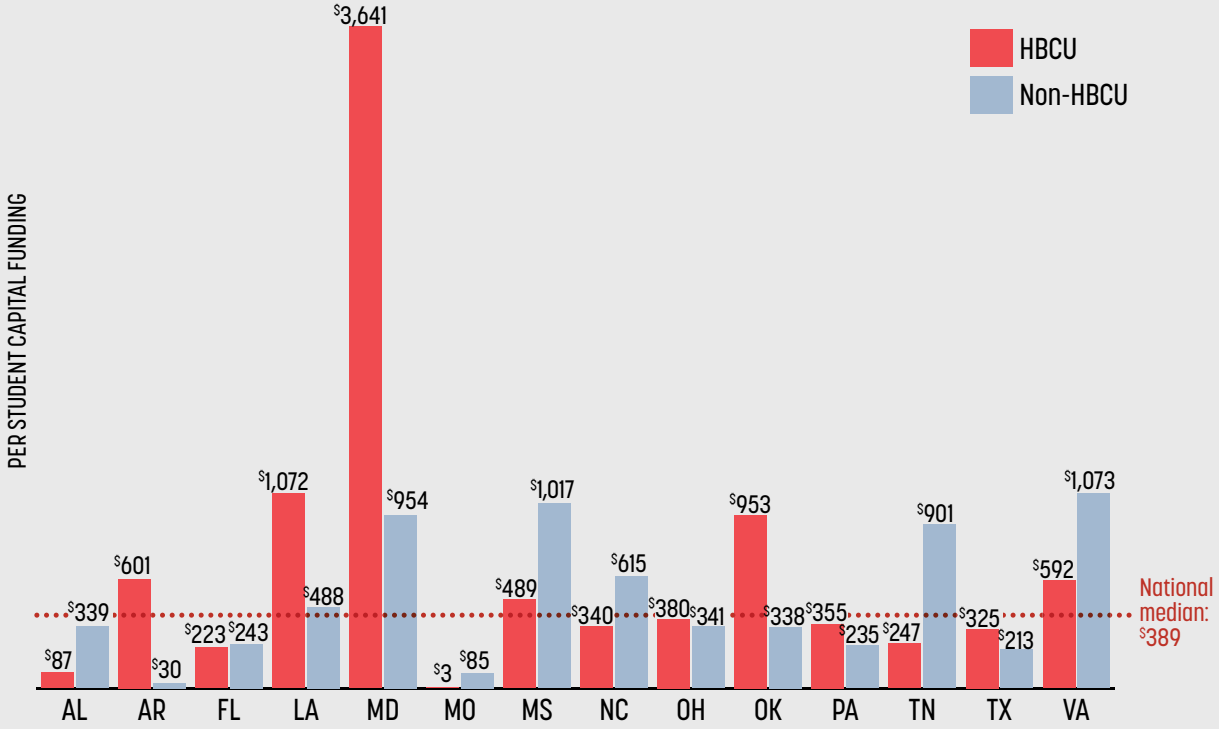
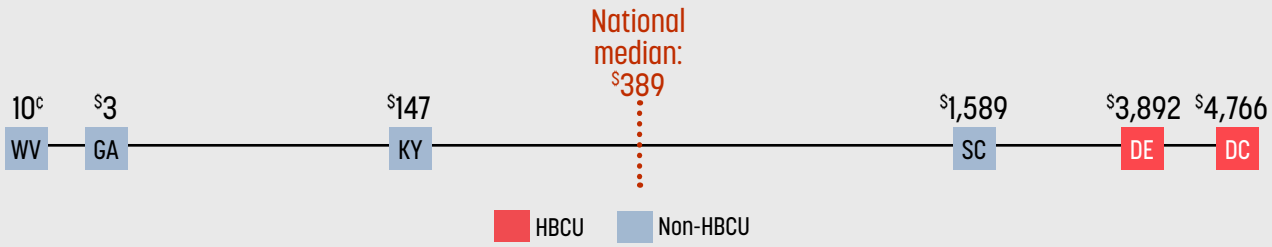


FIGURE 2

States That Fund Only HBCUs or Non-HBCUs



Source: National Center for Education Statistics. Integrated Postsecondary Data System. Retrieved April 2024. https://nces.ed.gov/ipeds

Note: These figures show student headcount rather than full-time-equivalent (FTE) student count because digital learning infrastructure must serve part-time and full-time students equally.

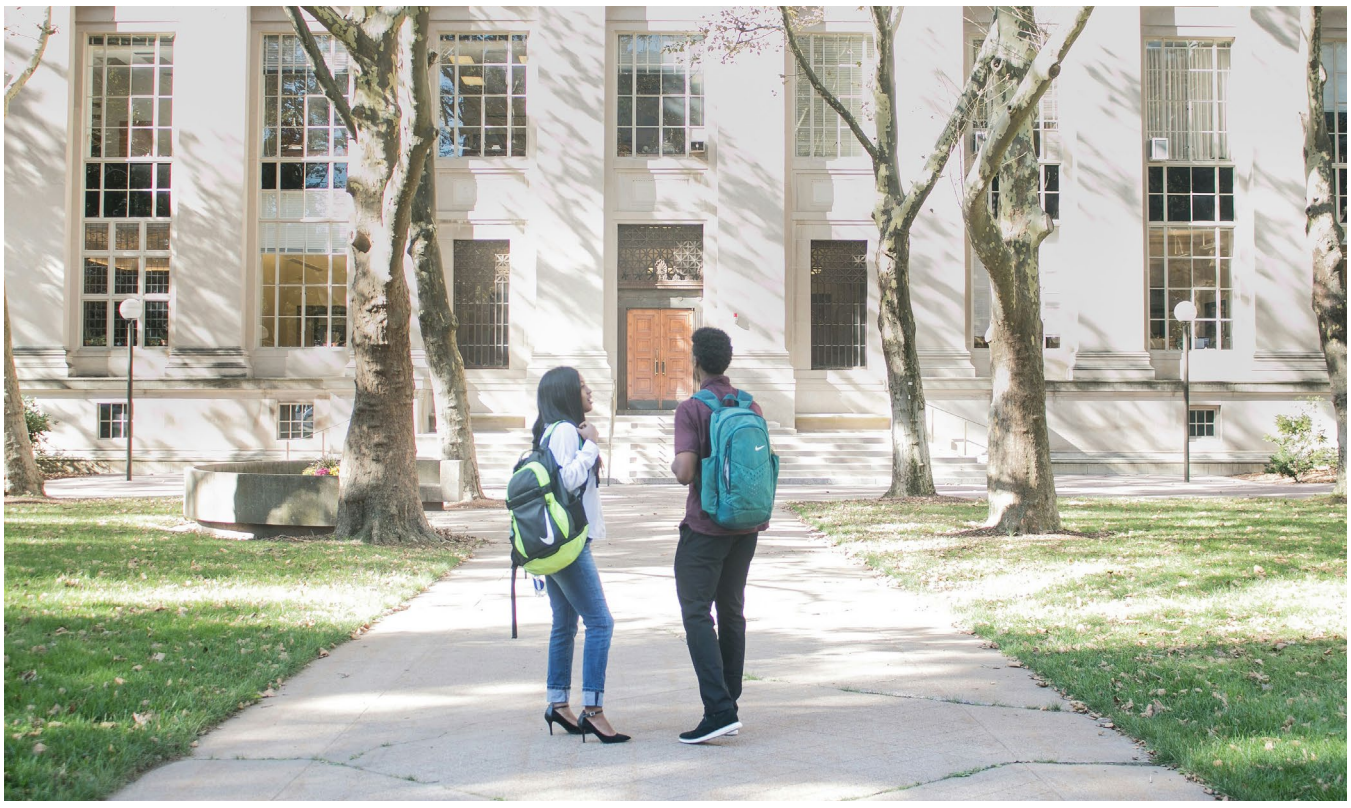
The Role of Capital Appropriations and Digital Infrastructure

Capital funds are intended for costs including facility upgrades, new equipment, and digital transformation. Insufficient capital funding has led to a range of long-term needs at HBCUs. Moreover, because overall funds have been limited, many HBCUs have deferred maintenance and other capital expenditures to be able to fund day-to-day operations. This choice, while born of necessity, leads to even greater capital needs and even higher capital costs.

The capital demands of HBCUs are most evident in facilities, including academic buildings, residential facilities, recreational facilities, and libraries. In fact, nearly half of HBCU building spaces have modernization and maintenance needs, as well as imperatives to preserve historic structures.[8] Climate volatility—including extreme heat, hurricanes, floods, tornados, extreme wind, and subzero cold snaps—exacerbates the problem because it poses the greatest danger to older structures.

However, while these facility-related concerns are very real and often easy to spot, HBCUs' greatest capital needs are related to digital learning infrastructure. This infrastructure is essential for higher education in the post-pandemic, increasingly online, AI-suffused world. Upgrading and maintaining technology is essential for a structured, supported, effective learning experience that leads to college completion. It also is critical for programs of study that prepare students for a virtual world of machine learning and large language models.

CCA has worked with HBCU leadership, faculty, student support staff, and students themselves to understand their technological needs and how they bolster student engagement and support, both inside and outside of the classroom. More than nine in 10 HBCU participants in this work noted that their colleges have to invest in modern facilities to bolster student success and remain competitive as institutions.



Court Cases Related to Capital Funding for Public HBCUs

In multiple states, legal challenges have proven that states underfunded public HBCUs. For example:

- Mississippi, like much of the South, had separate colleges for Black and White students until the mid-20th century. In 2002, after a lawsuit, Mississippi agreed to provide $500 million to the state's three HBCUs as compensation for prior underfunding. These funds went to general and capital needs, including academic programming, student aid, and facilities.
- In 2021, Maryland reached a similar settlement, paying $577 million to four HBCUs.
- The federal government recently concluded that Tennessee should boost funding at Tennessee State University by $2.1 billion to make up for a shortfall over more than three decades.[9]

While these court decisions begin to address the vestiges of past discrimination by providing funds that were long overdue, they do not address the issue of disparities in current capital appropriations or the need for future capital funding.

Funding Inequities Weaken HBCUs' Financial Position in Multiple Ways

Continued funding inequities weaken HBCUs' financial position in terms of capital costs, operating funds, and endowments.

Because of underfunding, public HBCUs often must draw from operating budgets to cover capital costs. Of course, annual state operating funds are not intended to cover capital needs. As a result, public HBCUs end up with less funding for both operating and capital costs.[10] Unsurprisingly, these types of spending patterns, which are characteristic of underfunding, lead to an unending state of emergency and deplete endowments.

Although HBCUs have high alumni giving rates, these rates do not translate into large endowments because alumni gifts are "quickly used for program or capital improvements rather than banked in an endowment."[11]

Therefore, it is little surprise that the average endowment per FTE at public HBCUs is $7,265, or less than a third of the $25,390 per FTE at public institutions that are not HBCUs. (On average, endowments of private HBCUs are $24,989/FTE, which is closer to public institutions that are not HBCUs—but less than 15 percent of the $184,409/FTE at private institutions that are not HBCUs.)

Philanthropy also plays a critical role in HBCU funding. In the wake of the events of 2020, including the killing of George Floyd and resulting activism, many philanthropic foundations increased support for HBCUs. While this funding was helpful in the short term, it is neither sufficient nor intended to make up for overdue state funding. A public–private solution is more appropriate. States must take responsibility for leveling the playing field for all HBCUs and ensuring that these institutions receive the long-overdue funding they need to maintain their success in today's digital environment. Philanthropy can provide general operating funds as well as project-based grants to supplement state support.

> Funding inequities weaken HBCUs' financial position in terms of capital costs, operating funds, and endowments.

Funding Increases

Should Focus on Technology Infrastructure

Given HBCUs' success, increasing their funding is the surest way to improve graduation rates for Black students. States should be doubling down on funding for HBCUs because they graduate more Black students. Yet appropriations still lag for HBCUs relative to PWIs.

Addressing these funding gaps must include significant appropriations for infrastructure—and for technology infrastructure in particular. As the COVID-19 pandemic made clear, college and university infrastructure includes more than physical buildings, equipment, and other facilities. Technology is now central to learning, and it is a critical part of college infrastructure.

When the pandemic began, colleges and universities rapidly pivoted to remote work and study for all students. Today, many students continue to choose blended and online education even though the vast majority of institutions have resumed in-person instruction. The percentage of students enrolled in an online course jumped from 36 percent in fall 2019 to 61 percent in fall 2021, while the percentage of students taking exclusively online courses nearly doubled over the same period—rising from 15 percent to 28 percent.[12]

Thus, digital learning has transitioned from being a limited option before the pandemic to a vital necessity during the pandemic. And now, colleges and universities are embedding these digital learning initiatives into their long-term strategies.

Colleges and universities cannot revert to their pre-pandemic approaches. They now must be equipped to provide classes, supports, and resources online. They also must add social media and other types of digital and mobile engagement to the cultural and social events, such as Battle of the Bands and Homecoming, that are at the center of campus life. And colleges must prepare for the growing computing power related to AI, which will have impacts that cannot yet be known.

All of these developments require figurative and literal rewiring: upgrades in internet switching technology and servers; changes and expansions in science, technology, engineering, and math (STEM) labs, computing centers, and server rooms; and more. Moreover, these improvements are not one-time expenses. They are ever-evolving needs that require new technology, maintenance, and upgrades.

As student needs and technology evolve, an effective digital learning infrastructure can play two critical roles at HBCUs. First, it can automate transactional elements of the college experience, freeing resources for the human interactions that drive HBCUs' success. For example, when registering for classes is automated, advisers are free to have longer, richer, more regular conversations with students about educational, career, and life plans. These interactions are known to contribute greatly to student success and completion.

Second, a strong digital infrastructure can ensure that the most human aspects of the college experience—teaching, learning, advising, and especially critical thinking—retain the personalization that is central to HBCUs, even when coursework and student engagement practices are delivered virtually.

Conversely, states that prioritize PWIs over HBCUs in infrastructure funding—through current funding levels and/or by failing to rectify historical inequities—will create or reinforce a system of haves and have-nots, hearkening back to the separate-but-not-equal American classrooms of the 1950s.

In the past few years, the federal government has provided HBCUs with more than $16 billion in funding. This substantial investment includes both routine annual allocations and critical infrastructure support from the COVID-19 American Rescue Plan. Recognizing the evolving landscape of higher education, particularly in technology, these funds are crucial for developing robust digital learning infrastructures at HBCUs. These significant investments affirm the importance of HBCUs in advancing educational equity and preparing all students for an increasingly digital future.

HBCUs Must Be

Equipped to Harness the Possibilities of AI

Higher education stands at a critical juncture as the field navigates the initial stages of AI integration. AI promises to turbocharge the need for digital learning infrastructure—and it will do so in institutions with equity gaps in technological investment. Although the gap in AI adoption among colleges and universities is not yet pronounced, historical inequity in resources to implement new innovations indicates that higher education may be approaching the precipice of a divide.

If left unchecked, well-funded institutions could accelerate ahead, leaving HBCUs—as well as community colleges and Minority-Serving Institutions (MSIs)—at a disadvantage. These institutions serve disproportionate numbers of historically excluded students and students from under-resourced families. They are the backbone of a higher education system that must educate all students if the United States is going to meet the needs of employers in the future. Therefore, states must act with intention and foresight to prevent gaps in the understanding and well-planned adoption of AI.

Clearly AI will soon have a direct influence on higher education services, such as the use of AI to improve advising. In addition, the growing demand for an AI-enabled workforce is changing what colleges must teach so their graduates are prepared for a high-tech, ever-evolving labor market. A 2023 IBM study, for instance, concluded that 40 percent of the company's workforce would need to reskill within a year.[13]

> Without such investment, digital transformation can become a privilege reserved for the most selective and well-resourced colleges, universities, and communities.

To meet these industry demands, HBCUs and other historically under-resourced institutions must have their financial needs met in terms of digital learning infrastructure, including better hardware and the software to run it. The need must match an AI future that will define all of society, not just higher education. Without such investment, digital transformation can become a privilege reserved for the most selective and well-resourced colleges, universities, and communities. This privilege will reinforce economic polarization, along with its disproportionate effects based on race and gaps that multiply across generations. Therefore, more than ever, technology in higher education must transcend barriers of prestige and wealth.

AI-Related Investments That All Colleges Need

Although AI is still in its infancy, all colleges' readiness for the AI future will require investments in three areas: enhanced academic experience, high-performance computing, and adjacent infrastructure enhancements.

Enhanced Academic Experience

Colleges will need to develop labs or centers dedicated to augmented or virtual reality benefitting from AI. This work may involve retrofitting historic buildings for new technological experiences, which in turn requires fiber optics, broadband, and high-speed Internet to ensure fast, seamless internet connectivity throughout all facilities. Other considerations include future-ready, AI-encompassing heating, ventilation, and air conditioning (HVAC) and building security; classroom modernization to allow for varied teaching styles supported by AI tools, including seating options, layout considerations, and disability accessibility; upgrades to data security infrastructure; and new tools, such as virtual reality headsets.

The costs of these retrofitting projects can vary widely based on the age, condition, and historic significance of the buildings involved, as well as the extent of the technological upgrades and integration. In addition, given how fast AI and technology might evolve in the future, this infrastructure is likely to need frequent updates.

High-Performance Computing

High-end servers are crucial for handling AI computations, especially if individual colleges and universities seek to have their own large language models powered by their own data for supporting student success. These updates will require expanded computing capacity, with costs varying depending on the current state of infrastructure. Investing in AI-integrated platforms to support personalized, adaptative learning experiences for students may require investments in processing units, data storage solutions, and management systems that accommodate AI processing.

Adjacent Infrastructure Enhancements

With the introduction of AI and more sophisticated technology systems, colleges will need to reinforce cybersecurity with advanced firewalls, intrusion detection systems, and privacy management via more secure data storage solutions. In addition, colleges will need data warehousing and systems backup.

In recent years, HBCUs have faced an increase in cyberattacks that result in class closures, registration delays, and data ransoms. During the COVID-19 pandemic, as learning moved online due to campus closures, HBCUs also became more vulnerable to cyberattacks and digital harassment. These attacks disrupted the safe, supportive learning environments that HBCUs provide—and in many cases, cost these institutions a great deal of financial, human, and capacity resources.

As noted throughout this report, many HBCUs face challenges in updating and securing their digital infrastructure, putting them at greater risk as cyberattacks become more common. Modernized networks, updated devices, and expanded information technology security resources would make HBCU systems more resilient. Proactive improvements to cybersecurity policies and education for students on responsible online behavior are also important.

During the COVID-19 pandemic, as learning moved online due to campus closures, HBCUs became more vulnerable to cyberattacks and digital harassment.

In addition to being important for students' safety and undisrupted learning, cybersecurity compliance is now tied to Title IV Federal Student Aid funding.[14] Thus, states that do not adequately fund digital improvements at HBCUs also put federal aid at risk for these institutions.

Next Steps: Leveraging Capital Funding

Capital appropriations are essential to ensure that all colleges and universities are equipped with the digital learning infrastructure required for today and the future. Equally important, capital appropriations present a budgeting opportunity for HBCUs. Three factors also may make capital appropriations the best form of budgeting to address historical underfunding of HBCUs:

1. Capital budgets are roughly 13 percent of higher education funding, which is a sizable pool of resources.[15]
2. Despite the size of capital budgets, they are not regularly discussed. This fact sets them apart from operating budgets, which often are the subject of intense discussion.
3. Capital budgeting does not follow typical national patterns of partisan politics. Decisions tend to be local. Legislators often can find reasons to fund capital projects without the challenging dynamics of negotiating operating budgets.

For these reasons, colleges have more agency in advocating for capital funding at both the state and federal levels.

The federal government can play a role in assisting HBCUs financially and in setting a tone at the national level. For example, the HBCU Capital Financing Program gives HBCUs low-cost loans to finance infrastructure improvements. In late 2020, the U.S. government discharged $1.6 billion in debts held under this program, which was a game changer for the 45 HBCUs—13 public HBCUs and 32 private, nonprofit HBCUs—that had participated in the program. However, colleges cannot rely on federal funding. State-level funding typically has more available money, and local policymakers typically are more receptive to requests for infrastructure funding.

Whether for federal or state funding, HBCUs—with their long history of underfunding and their track record of success—can leverage their specific needs to meet the challenges of the future.

Because HBCUs are so effective at engaging their students, they are uniquely equipped to find the best ways to engage students in the online, increasingly AI-driven world. Because they already excel at offering personalized support and improving feelings of belonging, they are well positioned to translate their effective strategies to a digital environment. For example:

- CCA partner Olive-Harvey College (Chicago, IL)—a predominantly Black community college—has incorporated predictive analytics into its students' first-year experience. The approach draws upon students' demographics, academic history, and semester plans to inform targeted interventions and resources. In an initial pilot of the program, the institution achieved a 31 percent retention rate among students who were previously the least likely to be retained.

- CCA partner Denmark Technical College (Denmark, SC)—an HBCU and historically Black community college—implemented three interconnected pathways to support students from the moment they arrive on campus through graduation and beyond. By emphasizing individualized career paths, this institution is increasing engagement, improving completion, and helping more graduates secure successful employment. Between 2017 and 2021, the college nearly doubled its on-time graduation rates.

Efforts to support HBCUs should help them build on strengths like these. They also should help other institutions learn from their success. While the experiences of HBCUs may be of particular benefit to other MSIs—including Predominantly Black Institutions, Hispanic-Serving Institutions, and Tribal Colleges and Universities—every college will have to rethink its work as the higher education experience evolves with technology.

In coming years, technology will be a critical tool to help colleges accelerate their student success efforts. CCA is committed to ongoing work with HBCUs and other MSIs to secure adequate funding and facilitate the use of technology to maintain—and grow—their track record of success. With a strong financial base, these institutions can continue to lead the way in engaging students, from first contact through college completion and on to successful careers.

HBCUs—with their long history of underfunding and their track record of success—can leverage their specific needs to meet the challenges of the future.

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