Pennsylvania's
STATE SYSTEM
of Higher Education

Digital Transformation in Weeks
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Commonwealth of Pennsylvania
Pennsylvania's State System of Higher Education

Executive Summary

Pennsylvania's State System of Higher Education ('State System'), consisting of 14 universities, provides education to over 93,000 students with over 2,300 degree and certification programs in more than 530 academic areas.

On March 11, 2020 the World Health Organization declared the novel coronavirus, COVID-19, a global pandemic. Several days later, Pennsylvania ordered all non-essential businesses, including universities, to close to mitigate the spread of the virus. The pandemic created an extraordinary challenge for the State System, with fluid and rapidly changing guidance from federal and state governments along with an unclear picture of how dangerous the disease would be in terms of transmissibility and its impact to the health of employees and students. Within a matter of weeks, our universities executed a warp-speed pivot from a primarily on-campus, in-person learning environment to a fully remote modality for all university functions. This established a virtual environment foundation for the remainder of the 2020-2021 academic year that continues today.

This effort, in combination with the ongoing State System redesign plan, accelerated the system's digital transformation progress. Every facet of our universities was significantly impacted by COVID-19, including residential living restructures for students, hybrid academic delivery for faculty, and a "work from anywhere" environment for staff. This digital service enablement elevated the power of collaboration and information technology to address perhaps one of the greatest operational challenges of the State System's history.

The impact of this transformation in such a short time span, as measured in our persistence rates, will be felt for years, in fact, will likely change the trajectory of academic delivery for the State System. Combined with systemic financial challenges, years of declining student enrollment, and other pressures exerted on the universities, this moment showcased how creativity, hard work, and a desire to serve our students can overcome any obstacle.

Reflecting on this transformation, the State System is proud of the widespread accomplishments to help students continue toward their degree completion. It is also a moment to look towards the future, a path in which innovation and partnerships can overcome any challenge to ensure future generations of students have the same and even better educational opportunities as previous generations.

Idea

To help frame the State System's response to the pandemic, it is important to underscore our position prior to the pandemic. The State System has been struggling with structural financial issues and enrollment declines for a number of years since its peak in 2010 with 120,000 students. To address these challenges, the State System embarked on a bold plan in 2016 to redesign itself in response to an array of challenges that confront public higher education nationally, but are acutely concentrated in the commonwealth. As such, Pennsylvania has the attention of the nation as it draws on lessons learned from more focused efforts in other states to fundamentally transform education and business models – allowing it to sustainably drive economic development and social mobility into the 21st century. Numerous initiatives were underway prior to the pandemic to help "right the ship," including having universities prepare plans to become financially stable through a variety of actions including voluntary retirement incentives, expansion of shared services, and other measures. This backdrop is vital, as it underscores the fragile financial position the State System was facing prior to the onset of the pandemic.

The pandemic did present unique challenges to a State System already struggling, but it was imperative that instructional services to students continue during the pandemic given the impact that our universities have on the commonwealth's economy. Specifically, a higher proportion of our graduates remain in Pennsylvania after obtaining their degree (roughly 7 in 10 or 71%), underscoring the impact our institutions have on their local economies.

Our universities needed to transition to a remote or hybrid learning model within a matter of weeks in the middle of the Spring 2020 semester. This included ensuring all employees and students had the equipment they needed to access online instruction, including laptops, Wi-Fi hotspots, cameras, and access to the necessary software. For students, this proved more challenging, as they were spread throughout the entire state and in some cases other countries. For faculty, this included training them on how to conduct instruction online so they could modify their lesson plans to meet learning objectives. For staff, this included ensuring access to all needed data, content, and software from remote locations as the state issued emergency orders to shut down on-campus offices. Finally, this transition also included retrofitting over **1,000** classrooms with equipment to support hybrid instruction on campuses.

Why does it matter?

Our universities determined early on to continue operations to support students in realizing their college goals. This needed to be done safely which required a significant ramp up in technology to support a remote workforce and tools to deliver instruction online. Additionally, over a third of our students receive Pell grants which are reserved for low-income families to send their children to college by subsidizing the cost of attendance. In many cases, a number of our students are also first-generation college students. Given the population we serve and the disproportionate impact the pandemic has had on low-income and minority communities, it was critical that our universities continue providing services.

- **Primarily Residential Model** – Prior to the pandemic, the State System's operating paradigm was a primarily residential, in-person model with limited online instruction. Universities function like a small city, providing housing, dining, health services, library resources, technology equipment, and high-speed broadband for students. A number of our students rely on these services, and transitioning to a remote model included a thoughtful review of how to provide services to those who would continue to need them.

- **Limited Online Instruction** – Although there were pockets of online delivery throughout the State System prior to the pandemic, approximately 55% of students enrolled in at least 1 online course during the 2019/2020 semester and roughly 5% were exclusively online, this delivery model was not offered at scale throughout the universities. Transitioning to a hybrid or online learning model required considerable training for faculty who may not have taught in this modality before; and because of this, it was vital to allow faculty time to re-orient their courses.

- **Student Composition** – Over a third of our students are Pell grant recipients, reside in rural parts of Pennsylvania, and/or are first-generation college students. A number of students did not have access to the technology such as laptops, Wi-Fi, or web cameras necessary to participate in a remote learning model. This, coupled with the fact that our students were spread throughout Pennsylvania (and in some cases all over the world), presented additional

challenges to ensuring students had the equipment they needed to continue their instruction. To overcome these challenges, our universities arranged methods to deliver equipment to student' homes or made arrangements for student pick up.

	Fall 2010	Fall 2019	Fall 2020
Underrepresented Minority	12.5%	19.8%	20.1%
Non-Traditional	10.4%	9.6%	9.8%
Out-of-State	11.3%	11.8%	11.6%
Full-Time	84.1%	80.4%	78.9%

- **Access to Broadband** - Access to broadband was a particular challenge based on the geography of our state. In fact, a number of students rely on the campus network to get to Wi-Fi. Our universities became creative in ensuring students were able to access high speed internet, from opening up Wi-Fi access from their parking lots, to shipping out Wi-Fi hotspots, to partnering with telecommunications providers who were offering free or low-cost high-speed internet access to students.

- **Fragile Financial Position** – The last element unique to the State System is that we met these challenges head on while still in a fragile financial position prior to COVID-19, compounded by the fact that 8 of our universities were in the middle of developing financial stability plans. Access to a very limited set of resources (financial and otherwise) drove our creativity and forced us to innovate to do all we could for our students.

Despite these challenges, we were able to accomplish many of our digital transformation goals such as increased automation, reduction in paper processes, and greater use of academic information technology in a matter of weeks without extending the semester.

What makes it universal?

Universities across the country were struggling with similar challenges to continuing instruction during the pandemic, each approaching the situation slightly differently to align with their unique circumstances. In early 2020, the State System defined a systemwide IT Strategic Plan which included a number of elements that were accelerated during the pandemic. Namely, this included a transition to fully cloud and mobile-enabled services as well as a

"Our universities have demonstrated tremendous agility and resilience in pursuing our mission in the most challenging contexts. In a matter of weeks – in some cases days – our universities fundamentally changed every aspect of their operating models so our students could continue progress towards their degrees in the midst of a global pandemic."

Cindy Shapira, Chair, Board of Governors

Dan Greenstein, Chancellor

continued adoption of digital transformation initiatives. The challenges we tackled also aligned with a number of NASCIO's Top 10 Priorities including "Digital Service Enablement", "Cloud Services", "Broadband / Wireless Connectivity" and "Budget/Cost Control". Much of what was outlined in our IT Strategic plan was adopted with urgency given the unprecedented nature of the pandemic.

Implementation

The State System universities collectively identified digital transformation as a key focus area in the systemwide IT Strategic Plan, and a number of universities were already well on their way to digitizing services and resources. Once the decision to transition to a fully remote model was made, IT teams quickly transitioned to enabling services. The approach included a review of people, process, and technology impacts to support faculty, staff, and students in a seamless manner. The project management methodology leveraged was an Agile approach which included numerous, short check-in meetings on a variety of topics to stay on task. These check-ins occurred multiple times a day, daily, or multiple times during the week. An escalation path to the central System Office was established to provide communication up and down, and a daily synopsis of outstanding issues, decisions, and actions was shared with all stakeholders.

In March 2020, an order to close all non-essential businesses in Pennsylvania to reduce the spread of COVID-19 was issued. Many of our universities were on spring break at the time of this order and by extending the break by one or two weeks, this allowed schools to redirect resources for the transition to a fully remote environment prior to welcoming students back. This needed to be done while minimizing access to our campuses. Success was defined as being able to continue to provide instruction to students and continue services during the pandemic.

Who was involved?

Hundreds of stakeholders were integral to our successful transition to remote operations. University Presidents oversaw transition operations and consulted and informed university stakeholders; universities' Council of Trustees remained engaged throughout to ensure community-based stakeholders were included in the transition efforts. The central System Office continuously sought guidance from federal and state authorities and provided collective direction when necessary while providing a mechanism for universities to escalate issues. IT teams worked collaboratively with procurement, legal, and facilities to ensure services were available. Our vendor partners played an important role in supporting our institutions by modifying agreements for traditional on-campus based licensing.

Across the State System, timely and open communication was a key component in keeping all stakeholders aware of decisions and plans prior to implementation.

How was it accomplished?

The transition began by ensuring employees had access to the tools they needed to perform their jobs. This included providing equipment to employees who needed it at home including loaner laptops, hotspots, cameras, or connectivity from home devices. Thousands of devices were shipped or delivered through coordinated pick up locations established across the commonwealth. These lending programs replaced on-campus resources such as computer labs and libraries that students accessed before the pandemic. For IT staff, organizations transitioned from a traditional schedule to a shift schedule model to ensure appropriate coverage for faculty and students as well as to ensure staff could get sufficient rest during this high-stress period.

In an extremely short period of time, thousands of faculty members were trained through online webinars on methods to transition their existing courses to an online or hybrid modality. Faculty were able to rely on each other for creative approaches to delivery of lab work, music instruction, and other courses which typically require an in-person component. For example, a human cadaver anatomy lab, a requirement for certain programs, was transitioned to a series of YouTube videos that that faculty used to record their own dissections.

Highlighting the need to prepare stakeholders for the transition included ensuring existing technology was sized appropriately to handle the significant demand. Zoom was used for online instruction and D2L served as our learning management system. Meetings were held with vendors to ensure appropriate sizing capacity of these solutions. Contracts were established or expanded to ensure remote management tools were utilized to effectively remote troubleshoot and resolve issues seamlessly for customers. One institution was in the middle of a project to transition to a chatbot solution to support student interaction, and this proved to be very useful during the pandemic. Guidance was provided to help Universities tackle the onset of "Zoom bombing" and other potentially disruptive events associated with virtual learning.

IT teams across each campus equipped over 1,000 classrooms with hardware and software to support a hybrid or Hy-Flex classroom that could support both in person and online students simultaneously. This traversed a number of technology solutions such as Meeting Owls, Microsoft Teams, and Zoom Rooms. Upgrading classrooms to a Hy-Flex model resulted in capacity demand for wireless beyond what it was designed to support on-site students to collaborate in a synchronous manner with remote students and this transition effort included adding and enhancing audio, video, and wireless capability collectively.

Because of social distancing measures, the lack of access to physical computer labs increased the demand for virtual desktop interface (VDI) solutions, which, through an internet browser, enable students to access licensed software without the need to install on physical computers. VDI played a critical role in establishing an equal playing field as this solution did not require students to adhere to minimum computer hardware standards or configurations. In essence, a student with a lower-cost laptop could run the same powerful software as a student using a high-end power computer.

Digital enablement during COVID-19 was also accelerated by the rollout of DocuSign, an electronic signature solution, to support processes which required a wet signature prior to the pandemic. Further digital enablement from the Universities included the deployment of technologies such as near-field communications (NFC), contactless payments, mobile ordering, and online photo submissions. A number of supporting IT solutions were necessary to ensure students could take exams remotely by expanding utilization of online proctoring and ensuring existing platforms could deliver alternate formats for students with accessibility needs. Specific HIPAA-secured services were established to enable universities to continue to provide critical tele-health or tele-counseling to students.

Early in the pandemic response, a decision was made to enable multiple collaboration platforms to support redundancy and resiliency of our communication solutions. The State System universities deployed collaboration platforms to enable and enhance inter- and intra-university communication. Because of the systemwide integration of these platforms, virtual meeting capabilities were significantly improved during the first months of the pandemic, enabling the universities to deliver testing and training to faculty and staff which resulted in achieving the critical success of pivoting to remote operations.

Impact

Faculty and staff left no stone unturned in the pursuit of creative solutions to addressing our students' needs with the goal of meeting them where they are. What impact did our efforts during the pandemic make?
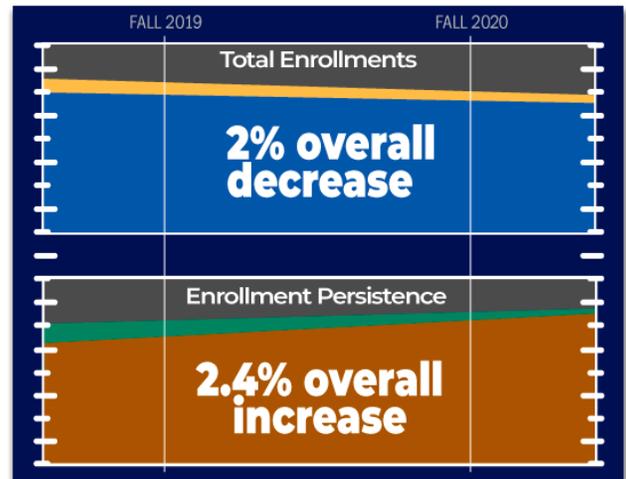
- **For our students** - Our efforts allowed students to continue progression towards their degrees. These efforts also enabled students to continue getting access to critical mental health counseling and health services in a digital format at a time when they needed these services the most.
- **For our faculty** - Our efforts rapidly and fundamentally enhanced and modernized the method by which the faculty can instruct students; it taught faculty how to collaborate with modern tools on platforms that can enable a high degree of engaging participation. This new modality has opened up possibilities for how our universities can reach new learners leveraging new pedagogical techniques.
- **For our staff** - Our efforts exemplified a 'work from anywhere' concept and demonstrated that being place-bound is no longer a barrier to continued delivery of services. The criticality of the services provided by IT departments proved

how fundamental technology is to running business operations on a campus. There is a greater recognition of the impact, scale, and reach of technology in strategic discussions regarding new or emerging services.

How do we know that it made things better?

Considerable efforts were taken to ensure our students continued progression toward their degree attainment and the data is proving this out.

- Our schools collectively saw an enrollment drop of only 2% from Fall 2019 to Fall 2020; this is compelling especially in light of the national undergraduate enrollment average decline of 3.6% resulting from the pandemic.
- Our universities made progress in improving second-year persistence rates, especially for underrepresented minorities, during the pandemic. Persistence is a measure tracking freshman that reenroll in college for their second year. State System persistence rates for Fall 2020 were 78% for full-time Bachelor's degree-seeking students who first enrolled in 2019, which represents a 2.4% increase as compared to the prior year, and is higher than the most recent national average of 74%. In addition, persistence rates for under-represented minorities students for Fall 2020 was 68.5% which represented a 4.7% increase from the prior year.

What now?

The State System universities have navigated the pandemic effectively and admirably, ensuring students' continued progress towards their degrees while mitigating health risks to members of their communities. Universities adopted different approaches to the pandemic, reflecting considerable variation in their circumstances, but together demonstrated a collective commitment to ensuring affordable, quality, public higher education remained accessible to students to improve their life circumstances and keep the economic engine in Pennsylvania strong. Why? Because the majority of State System graduates decide to stay in the commonwealth, and the impact our institutions have on their local economies is so great.

With the success of our digitalization efforts, faculty and staff have first-hand experience of what's possible. Although the future is difficult to predict, it is unlikely that our universities will return completely to a pre-COVID-19 environment. Use of these techniques are now an additional tool to provide services in new and unique ways. The success of this effort has proven that remote and hybrid learning can be a successful delivery model and provides an impetus for continued investments in this infrastructure. To a large degree, COVID-19 has fundamentally transformed our universities.

Longer term, offering greater remote learning has the potential to increase student enrollment by attracting long-distance or non-traditional students who cannot or do not need to reside on or near university campuses. This approach can increase a competitive advantage for our public higher education system and provide another attractive option for future students, while also improving the financial position of the State System.

The scope and speed of this project could not have been accomplished without the extensive work of all university personnel and faculty. The unprecedented disruption of COVID-19 on higher education will be felt for years, however, it is a testament to the resiliency of the State System to adapt and change for the betterment of our students and their academic success. Thanks to the creativity and innovative spirit of dedicated faculty and staff, an expansive framework for virtual and hybrid learning has evolved, along with the knowledge that our limitations in terms of how services are delivered is only in our minds.