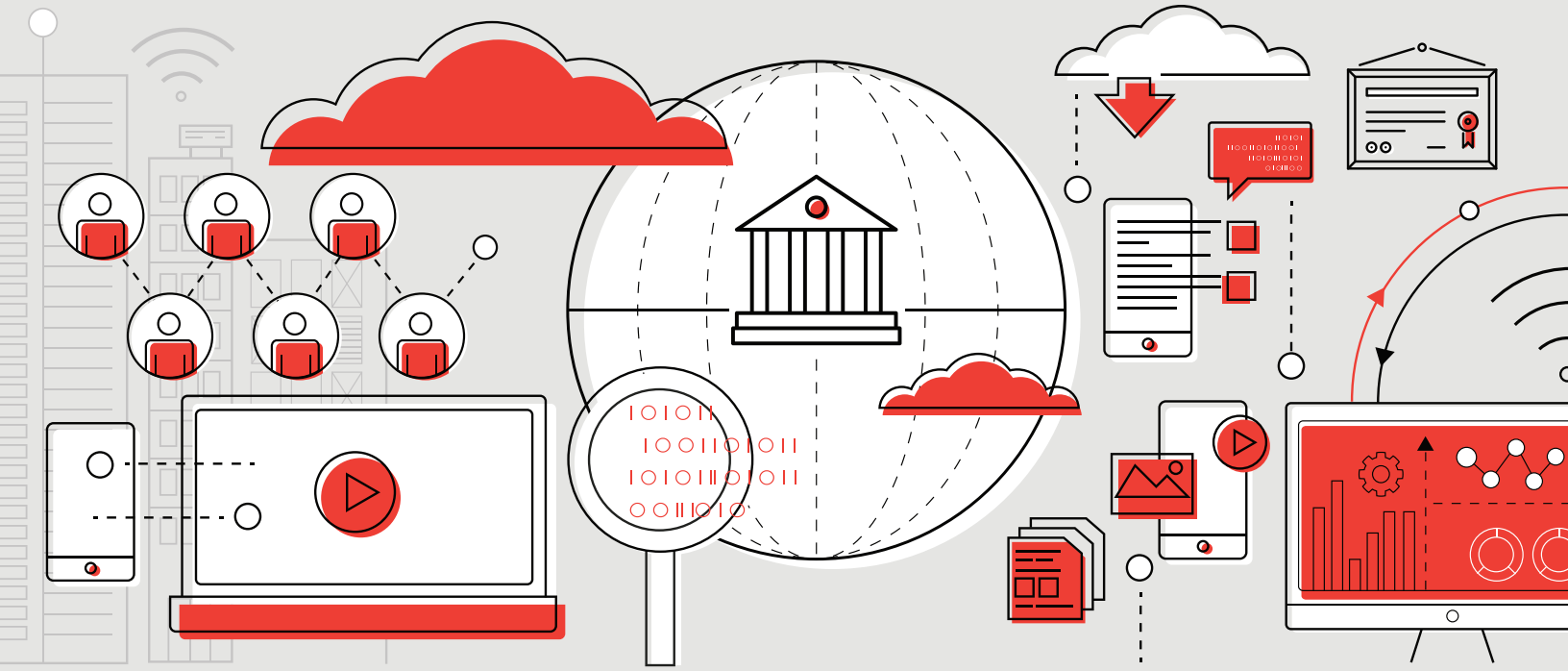
2019
CAMPUS COMPUTING

The 30th National Survey of Computing and Information Technology in American Higher Education

Kenneth C. Green



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October, 2019

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Begun in 1990, The Campus Computing Project is the largest continuing study of the role of computing and information technology in American higher education.

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Additional information about The Campus Computing Project is available online at: campuscomputing.net.

Past (out-of-print) editions of the annual Campus Computing Survey Report (1990-2002) are available on microfiche from the ERIC Clearinghouse Service sponsored by the US Department of Education. Please check the ERIC web site: www.eric.ed.gov

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CAMPUS COMPUTING, 2019

The 30th National Survey of Computing and Information Technology in American Higher Education

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campuscomputing.net 16 October 2019

The 30th National Survey of eLearning and Information Technology in US Higher Education

Hiring and Retaining Campus IT Talent Are Challenges; Many Campus Leaders Are Not Well-Informed About nor Engaged with Digital Issues

New data from the fall 2019 Campus Computing Survey highlight the challenges that IT leaders across all sectors of US higher education confront in hiring and retaining IT talent. More than three-fourths (77 percent) of the CIOs and senior campus officials participating 2019 survey cite "hiring and retaining IT talent" as a top institutional IT priority. Similarly, 78 percent point to uncompetitive campus salaries and benefits as a major problem in the quest to hire and retain IT talent. And reflecting the campus financial challenges that affect hiring and staff retention efforts, fully two-thirds (67 percent) agree/strongly agree that institutional IT funding "has not recovered from the budget cuts" experienced by colleges and universities across all sectors of higher education since the "Great Recession of 2008."

A Real "IT Talent Crisis" on Campus?
(Fall 2019)

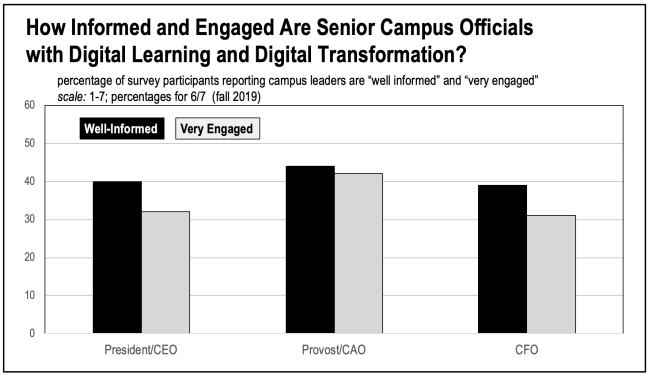
- **77 percent** identify "hiring/retaining qualified IT personnel as a top campus IT priority *(#2 IT priority in 2019; IT data security is #1 at 83 percent)*
- **78 percent** agree/strongly agree that "we have a difficult time retaining IT talent because our salaries and benefits are not competitive with off-campus job opportunities."
- **67 percent** report that "our IT funding has not recovered from the budget cuts we have experienced over the past four-six years."

"Personnel, not tech products, are the heart of the campus IT infrastructure," says Kenneth C. Green, founding director of The Campus Computing Project. "We know that the demand for campus IT resources and services continues to grow. Concurrently, the continuing annual and mid-year campus IT budget cuts, as documented by the data from the annual Campus Computing Survey, affect IT hiring and personnel retention as well as institutional efforts to update technology and to enhance and expand campus IT resources and services." Green adds that the hiring and retaining IT talent issues appear to apply across all sectors and geographies: "small colleges, large universities, community colleges, rural institutions and colleges in major metropolitan areas all appear to confront IT similar talent challenges."

Are Campus Leaders Knowledgeable About and Engaged with Digital Learning and Digital Transformation?

The budget and personnel challenges that confront campus IT leaders, coupled with the continuing (indeed elevated) conversations on and off-campus about digital learning and digital transformation, raise interesting questions about the knowledge and engagement of senior campus officials on these issues.

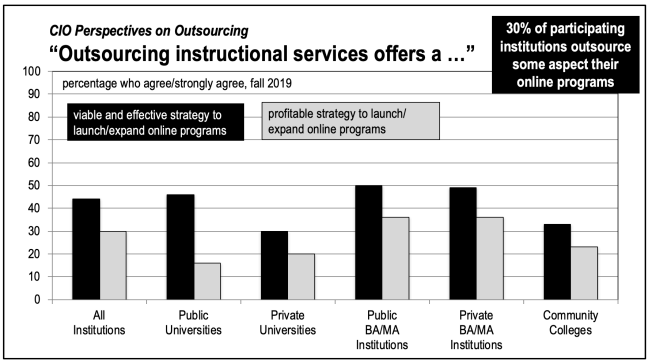
The 2019 survey data suggest that significant numbers of presidents, provosts, and CFOs are neither well-informed nor very engaged with the digital learning and digital transformation issues that confront their institutions. Only two-fifths of the fall survey participants view their presidents, provosts/CAOs, and CFOs as "well-informed" on digital learning and digital transformation. And less than a third report their presidents and CFOs are "very engaged" in these initiatives at their institutions. In contrast, just over two-fifths report their CAOs/provosts are "very engaged" on these topics.



"Given the ubiquity of IT across almost anything and everything related to instruction, recruitment, campus services, analytics, and campus operations and management, it is increasingly important that senior campus officials – presidents, provosts, and CFOs – be both well-informed and very engaged," says Green. He comments that these are issues which senior campus officials "cannot avoid or delegate." For many campus IT leaders, one aspect of their unofficial job responsibilities may now include strategies to inform and engage their president, CAO, and CFO in the key IT planning and policy issues that confront the institution and concern students and faculty.

Outsourcing Instructional Services

The past year has seen much public discussion about the pros and cons of outsourcing instructional and related services for online programs. The 2019 survey data reveal that IT leaders are ambivalent, at best, about the outsourcing as a viable and effective strategy to launch/expand online programs. Moreover, IT leaders have real concerns about the actual profitability of outsourcing strategies and agreements.



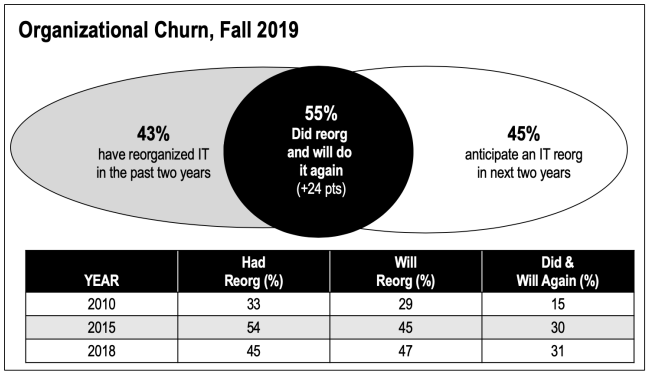
Less than half of the 2019 survey participants view outsourcing as a viable and affective strategy" for online programs. The numbers vary by sector, but do not pass 50 percent in any one sector. Concurrently, less than a third of the survey participants believe that outsourcing is a profitable strategy for their institutions.

"These data help explain some of the recent push-back on third party OPMs – online program managers," says Green. Although campus IT officers are typically not responsible for online academic programs, "they are often engaged in the planning process because of key IT infrastructure and support issues that are core to the success of online initiatives." Too, campus tech leaders may be concerned about the often significant seat fees OPMs typically extract under outsourcing agreements. Moreover, IT leaders are presumably more protective of the institutional brand and reputation than contracted OPMs: IT officers know that it is the reputation of campus departments and institutions – not OPMs – that rise or fall based on the performance of online programs.

Continuing Organizational Churn in IT Units

The 2019 data again highlight the continuing "organization churn" in many campus IT units. Moreover, the 2019 data show more churn than just a year ago.

The percentage of institutions reporting a recent or anticipating an impending reorganization of central IT services are similar to 2018. Yet what is truly striking this year is the dramatic leap in the percentage of campuses that recently reorganized and also expect to do so again in the next 24 months – from 31 percent in 2018 to 55 percent in 2019.

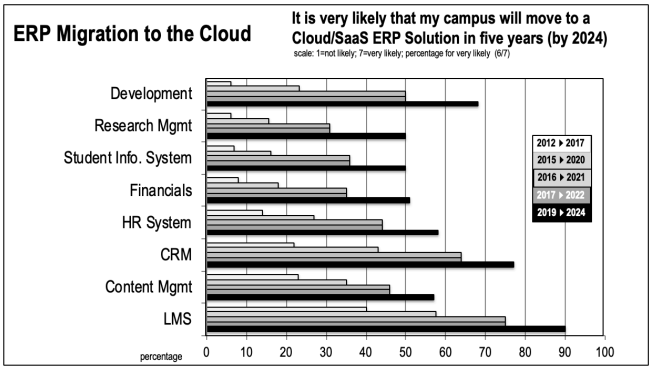


YEAR	Had Reorg (%)	Will Reorg (%)	Did & Will Again (%)
2010	33	29	15
2015	54	45	30
2018	45	47	31

The churn may be attributed to several factors such budget cuts (leading to the consolidation of various units) or major personnel changes in IT, or institutional leadership. But the big leap this past year signals rising IT organization turbulence at many colleges and universities.

Migration to the Cloud Remains Slow . . . and Cautious?

The fall 2019 data document the slow – some might say cautious – migration to the Cloud for key ERP applications. Although a large the majority IT officers at participating institutions have moved (or expect to move) to the Cloud by 2024 for LMS, CRM, and Alumni/Development applications, the migration to SaaS/Cloud-based financial and student information systems (SIS) remains slow: just half of the 2019 survey participants expect to be on Cloud-based financial and SIS platforms by 2024.



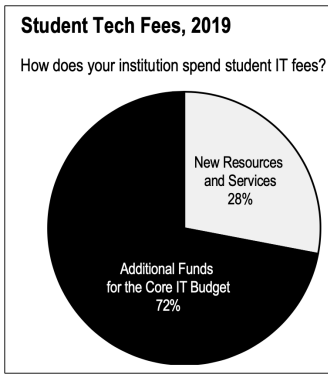
"The data on the slow migration of the most complex campus ERP applications to the Cloud may – or may not – be surprising," says Green. The corporate experience with the Cloud would seem to bode well for higher ed. Moreover, other data from The Campus Computing Survey reveal that the overwhelming majority (93 percent) of campus IT leaders acknowledge that the "Cloud will play an increasingly important role" in their institution's IT strategy. An almost three fifths (57 percent) report that migration to the Cloud is an important part of the institutional plan "to help reduce IT costs." However, even as higher ed and its ERP providers have been talking about migration to the Cloud for almost a decade, the actual movement of major (and complex) ERP modules to the Cloud seems slow.

"The compelling merits of a Cloud strategy notwithstanding, higher ed is very risk aversive," comments Green. His campus conversations suggest that many IT leaders feel their ERP providers have yet to provide a compelling case for moving to the Cloud. "Others,' says Green, "view moving their key applications to the Cloud as a 'journey of discovery' and would prefer to watch their peers go first and learn from that experience."

Student IT Fees

Student IT fees vary dramatically by sector. Among public institutions almost two-thirds (63 percent) of universities and more than three-fourths of public BA/MA institutions report student IT fees. In contrast, just over a third (36 percent) of private universities report IT fees, while the number for private BA/MA campuses is 31 percent. About half of the community colleges participating in the 2019 survey also report student IT fees.

The interesting question about student IT fees is actually how campuses spend this money. Almost three-fourths add student fees to the core campus IT budget, while just over a fourth use student fees for to support new resources and services. Interestingly, fully half report using student IT fees for non-IT expenses.



Spending IT Fees	%
Computer Labs	38
Enhanced WiFi	32
Instructional Facilities & Resources	30
Curricular Resources	14
Library Resources	16
User Support Resources	28
Free/Discounted Printing	23
Other IT expenses	33
Other Non-IT Expenses	50

Reflections on 30 Years of The Campus Computing Survey

Green notes that 2019 marks the 30th annual Campus Computing Survey, which was launched in 1990 as a way to provide benchmarking data about IT planning and policy issues to IT leaders and the larger higher education community. "What's striking about the survey data in recent years is that the technologies that are common, indeed ubiquitous, both on- and off-campus have changed dramatically over three decades. However, the underlying planning and policy issues that confront IT leaders are strikingly similar to the critical issues that emerged from the early years of the survey: user training and support, financing IT resources and services, recognition and reward for faculty who view their technology as part of their scholarly portfolio, assessing the impact of IT investments in instruction, and managing user expectations resources and services institutions."

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Launched in 1990, The Campus Computing Project is the largest continuing study of the role of computing, eLearning, and information technology in American higher education. The project's national studies draw on qualitative and quantitative data to help inform campus IT leaders, college faculty and administrators, policy-makers, and others interested in a wide array of information technology planning and policy issues that affect colleges and universities.

The 2019 survey is based on data from CIOs and senior IT officers at 235 two- and four-year public and private colleges and universities across the United States.

The 2019 Campus Computing Survey was supported, in part, by the following project sponsors: Amazon Web Services (AWS), Blackboard, Campus Management, CampusWorks, D2L/Brightspace, Echo360, EduNav, Ellucian, Jenzabar,, Microsoft, Moran Technology Consulting, Oracle, and Unit4.

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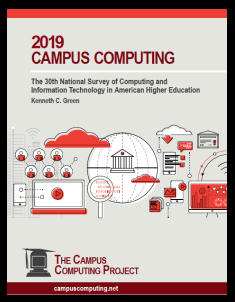

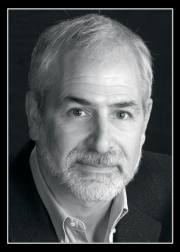

Casey Green
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Methodology

- 235 institutions
- Web-based data collection
- Survey period: Sept 10 - Oct 7

Participants by Campus Type	Dept. of Ed N (adjusted)	Survey N	Participation Rate (%.)
Public Research & Doctoral Universities	168	28	16%
Private Research & Doctoral Universities	92	12	13%
Public 4-Year Colleges (Baccalaureate & Masters)	374	46	13%
Private 4-Year Colleges (Baccalaureate & Masters)	824	90	11%
Associate Degree/ Public Community Colleges	1018	59	6%

Key Findings for 2019

- **SMALL, INCREMENTAL CHANGES:** Some very modest gains on key issues, coupled with some troubling declines
- Just two-fifths report presidents, provosts, and CFO are "very knowledgeable" about digital learning
- Continuing impact of budget cuts on staffing and support services
- Slow migration to the Cloud for key ERP applications

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Top Four Campus IT Priorities, Fall 2019

Rank	Issue	Challenges (and yet…!)
1	IT Data Security (83%)	• Just 34% rate IT security as "excellent"
2	Hiring/Retaining IT Talent (77%)	• Four-fifths (78%) report it is hard to hire/retain IT talent because of off-campus competition and salaries
3	Leveraging IT to Support Student Success (73%)	• 38% report IT investments to support student success efforts have been very effective
4	Providing Adequate User Support (71%)	• 46% rate user support services as excellent??? • 14% report IT training for faculty as excellent; 7% view tech training for students as excellent

Scale: 1=not important; 7=very important; pct. 6/7

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Top 10 Campus IT Priorities, Fall 2019

The Top Four	%
IT Data Security	83
Hiring/Retaining IT Talent	77
Leveraging IT to Support Student Success	73
Providing Adequate User Support	71

The Next Six	%
Data analysis / learning and managerial analytics	60
Digital accessibility / ADA compliance	57
Supporting online/distance education	53
Assisting faculty with the instructional integration of IT	52
IT business continuity / IT disaster recovery	50
Professional development for IT personnel	49

scale: 1=not important; 7=very important; pct. 6/7

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CIOs Have Great Faith in the Benefits of Digital Technologies for Instruction (Fall 2019)

	(%)
Adaptive learning technology has great potential to improve learning outcomes for students.	96
Digital curricular resources provide a richer and more personalized learning experience than traditional print materials	86 -(6)
Digital curricular resources make learning more efficient and effective for students.	94
Our efforts to go "all digital" with course materials will be impeded by the fact that many of our students do not own the digital devices – computers or tablets – they need to access digital content and resources.	29

But actual deployment numbers remain low:

- Only 18% of general education classes use courseware (+4% from 2017)
- Just 10% of developmental and general ed. courses use adaptive learning technologies (+2 from 2018)

Faculty are far less optimistic about digital course materials than CIOs & CAOs

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Many Campuses Still Do Not Assess Their Tech Investments

12% (-4 from 2018)

My campus has a formal program to assess the impact of IT on instruction and learning outcomes.

"Very Important" Institutional Priority

57% (-7 from 2018)

Assessing the benefits of investments in computing and technology resources

43% (-7 from 2018)

Assessing the ROI for IT spending and resources

48% (-5 from 2018)

Surveying students and faculty about IT resources and services

- Survey data going back more than a decade confirm that many campuses DO NOT evaluate the impact and benefits of their IT investments
- **Given new emphasis on analytics, why is IT assessment NOT a very important priority?**

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A Real "IT Talent Crisis" on Campus?

(Fall 2019)

- **77 percent** identify "hiring/retaining qualified IT personnel as a top campus IT priority **(#2 IT priority in 2019)**
- **78 percent** agree/strongly agree that "we have a difficult time retaining IT talent because our salaries and benefits are not competitive with off-campus job opportunities."
- **67 percent** report that "our IT funding has not recovered from the budget cuts we have experienced over the past four-six years."

Personnel, not products, are the heart of the campus IT infrastructure

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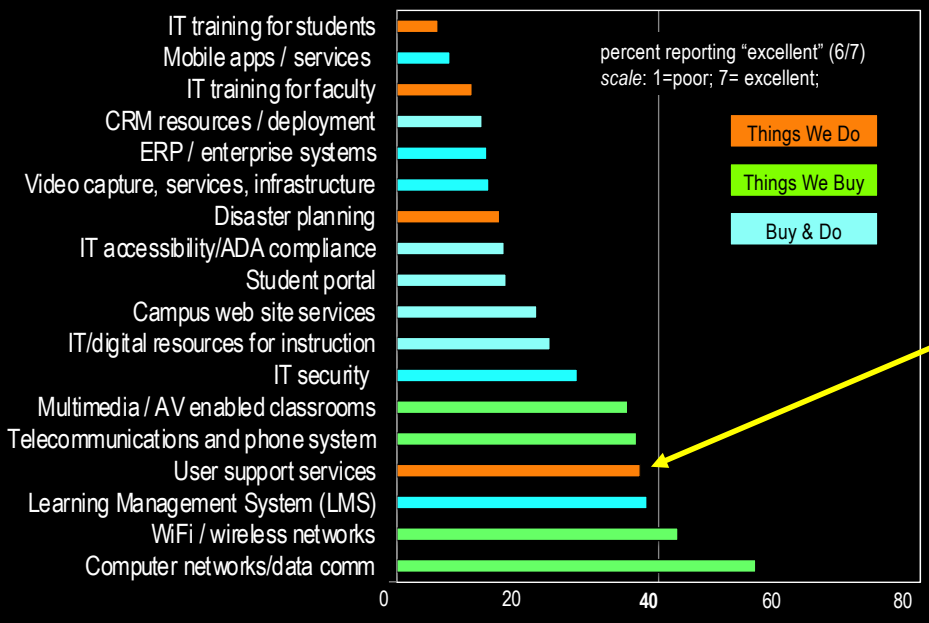
Rating the IT Infrastructure, Fall 2019



- Highest rankings for the "stuff we buy"
- Lower rankings for services
- Would faculty and students really agree with the ranking for user support services?

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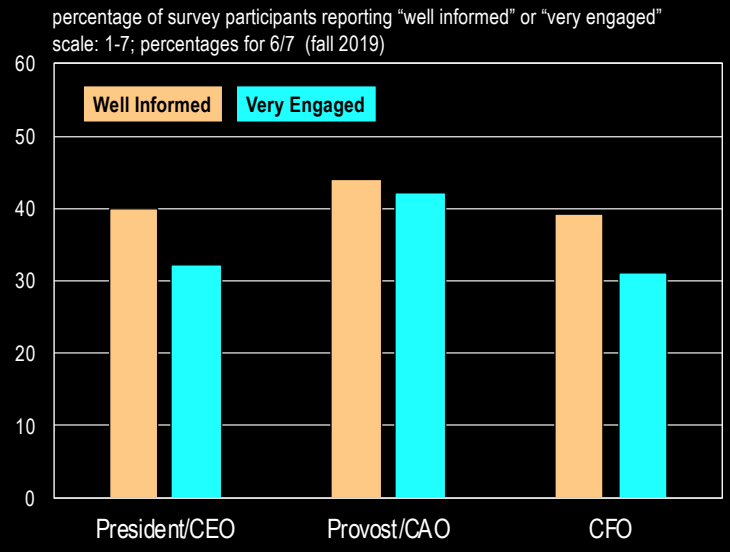
How Informed and Engaged Are Senior Campus Officials with Digital Learning and Digital Transformation?



- What's the role of IT leadership in informing senior campus officials about digital learning and digital transformation?
- What strategies foster better understanding and more engagement?

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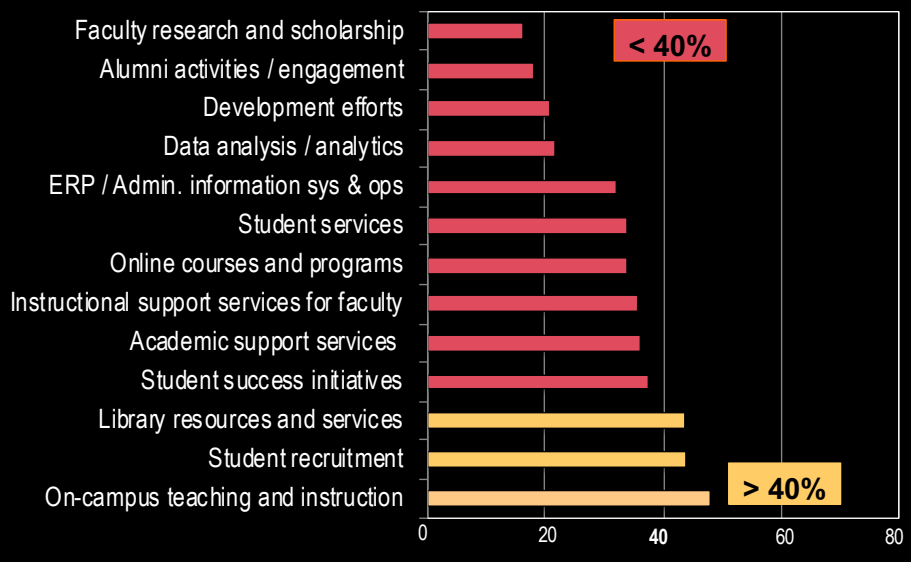
CIOs Rate the Effectiveness of Campus Investments in Information Technology, Fall 2019

pct. rating very effective (6/7); scale: 1=not effective; 7=very effective



- Continue to see very mixed assessments about the effectiveness of campus IT investments

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Analytic Angst

Current analytic tools, resources, and efforts currently fall far short of provider promises and of campus needs and expectations.

The Current Assessment of Analytics (fall 2019)	%
Data analytics is the #5 IT priority (% very important)	60
Campus investment in analytics rated "very effective"	22

- Not yet delivering on actual, implied, and inferred potential and promises of analytics
- Critical roles of trustworthy data, effective analytic tools, and thoughtful training
- "Data babel" caused by efforts to integrate data from various platforms

Use data as a resource, not as a weapon

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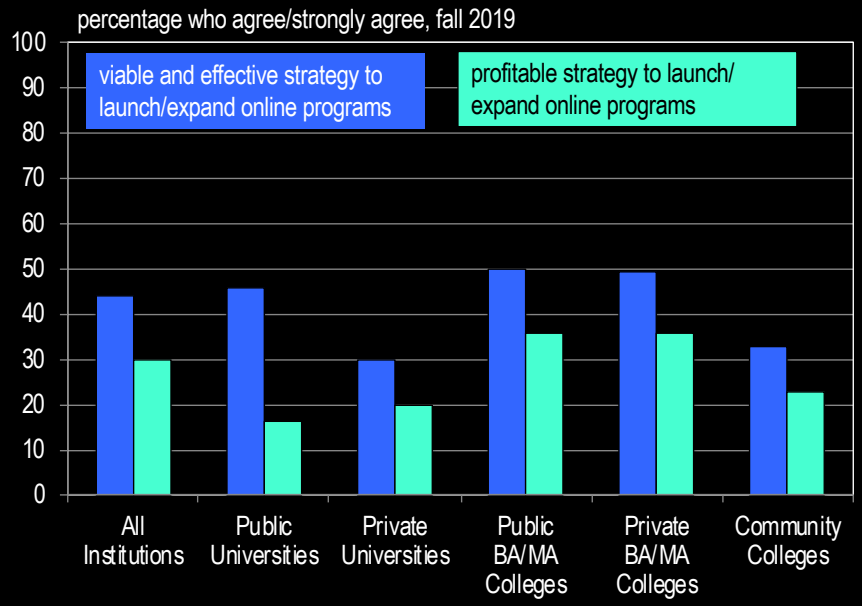
CIO Perspectives on Outsourcing

"Outsourcing instructional services offers a …"



30% of participating institutions outsource some aspect their online programs

- Although outsourcing may provide a *viable* strategy for some campuses to accelerate the launch of online programs, the vast majority of survey participants do not view outsourcing as a *profitable* strategy.

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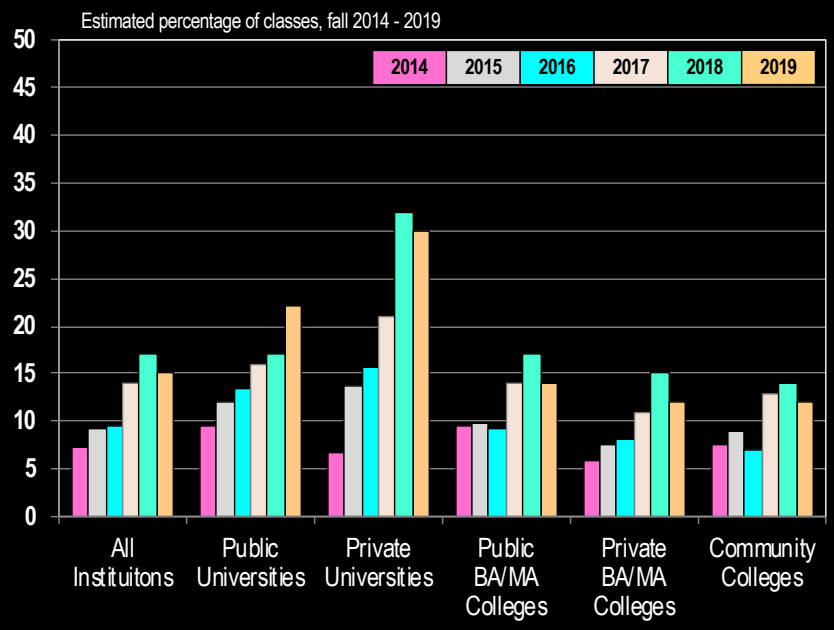
Video Lecture Capture



Just 18% rate video capture services as excellent

- Video as a course resource has surpassed audio: 15% vs. 11%.
- Percentages understate real numbers as much of the activity is in large, lower-division undergraduate classes and also online programs
- More video activity in universities.
- Video increasingly important for hybrid, flipped, and online courses

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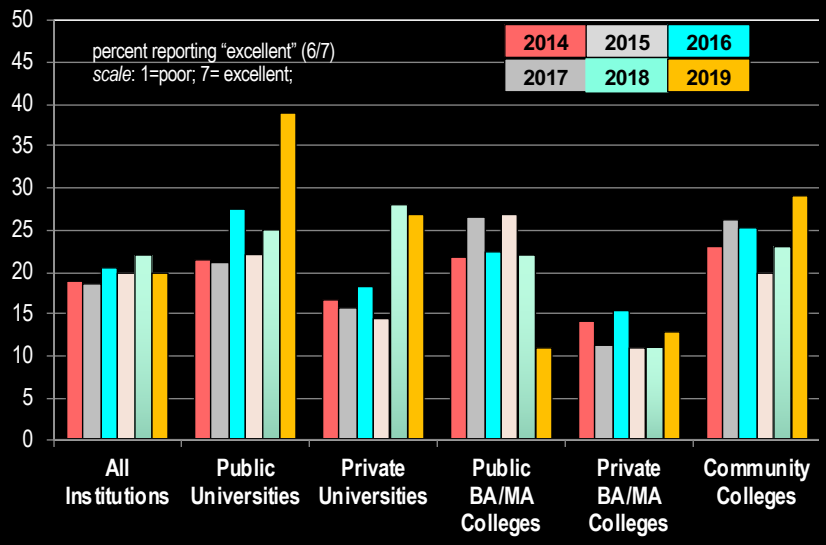
CIO Assessments of Digital Resources and Services for Disabled Users, Fall 2014-2019



Digital accessibility & ADA compliance are the #6 IT priority

- Campuses (still!) struggle to provide legally-mandated digital access and resources to disabled students.

Lawsuits Waiting to Happen

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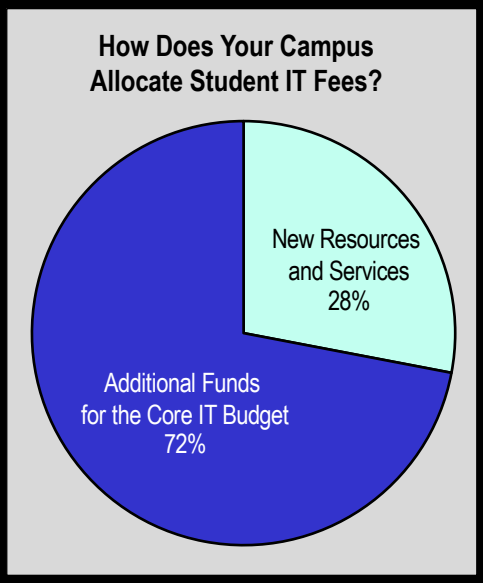
Student Tech Fees, 2019



Spending IT Fees	%
Computer Labs	38
Enhanced WiFi	32
Instructional Facilities & Resources	30
Curricular Resources	14
Library Resources	16
User Support Resources	28
Free/Discounted Printing	23
Other IT expenses	33
Other Non-IT Expenses	50

- Like state lottery money, student IT fees are most often used to for core expenses.
- Half the surveyed institutions report using student IT fees for non-IT expenses!

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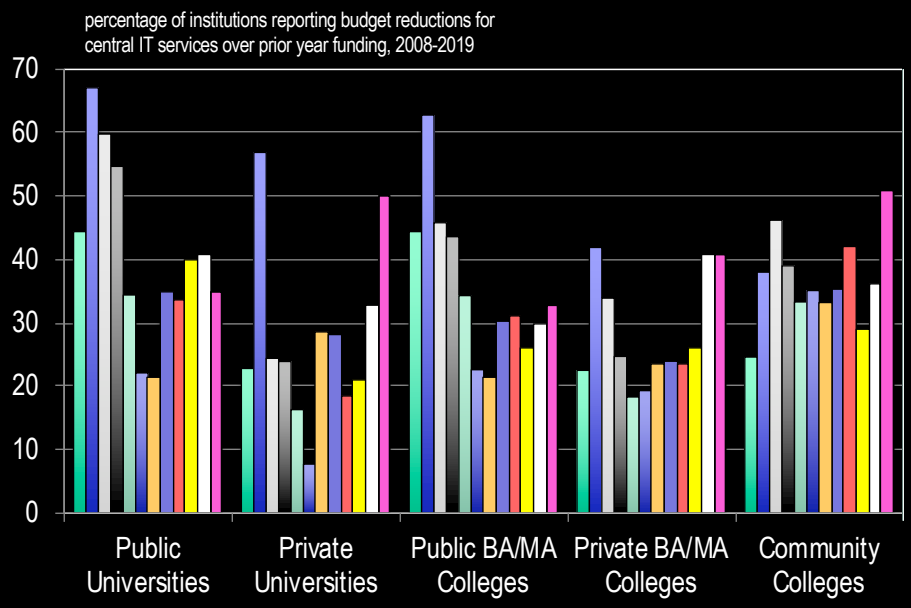
Budget Cuts, 2008-2019



- Still suffering from the compounding consequences of continuing budget cuts
- Budget cuts averaged 7% (range 2-9%)
- Community Colleges really suffering: 51% had budget cuts in 2019 (up from 36% last year)

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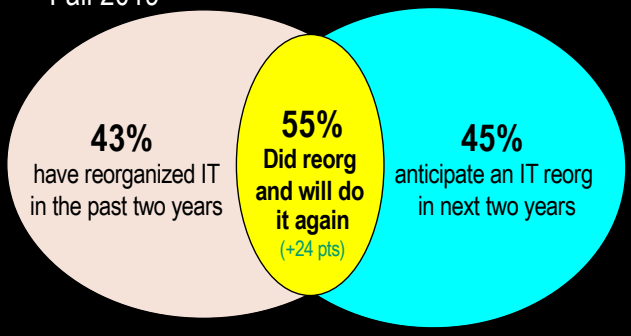
More Organizational Churn in 2019

Fall 2019



YEAR	Had Reorg (%)	Will Reorg (%)	Did & Will Again (%)
2010	33	29	15
2015	54	45	30
2018	45	47	31

Year after year, many campuses that recently experienced a re-org of central IT anticipate another one in the next two years. Key factors:

- performance
- personnel - arrivals/departures
- budget issues
- other?

What's the impact of the churn on leadership, morale, IT recruitment, funding, and IT operations?

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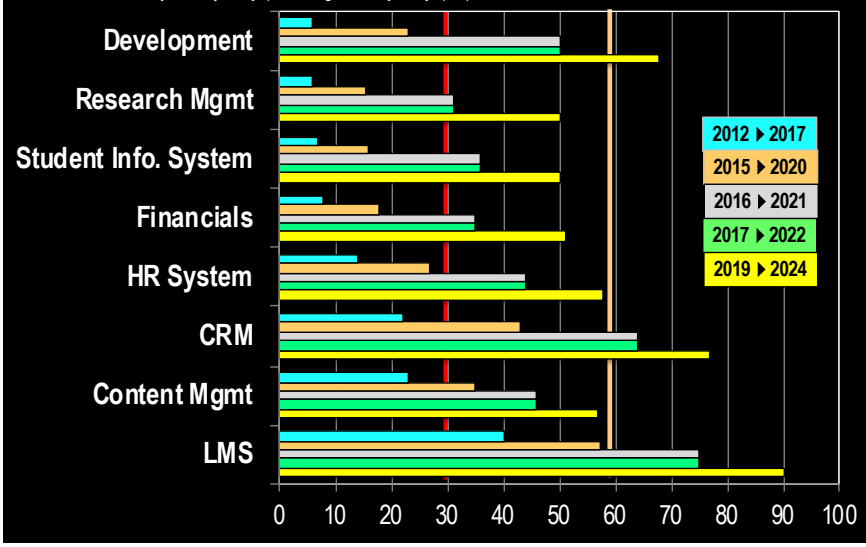
ERP Migration to the Cloud

It is very likely that my campus will move to a Cloud/SaaS ERP Solution in five years (by 2024)

scale: 1=not likely; 7=very likely; percentage for very likely (6/7)



Some small gains for 2019 but many CIOs still don't see "big cloud" apps coming soon to their campuses

WHY?

- Absence of clear path from ERP providers
- Can't visualize moving to the Cloud
- Want to retain command and control
- Let others make the journey first

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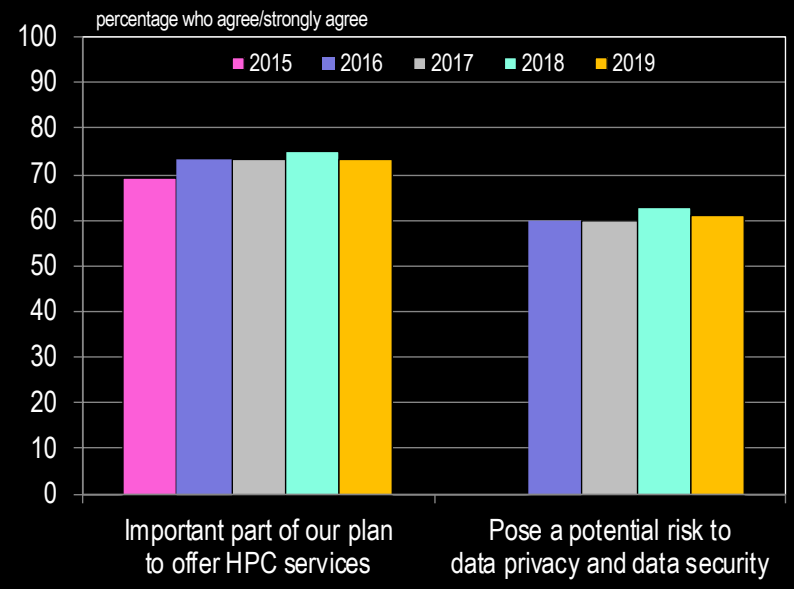
Third-Party Cloud Services: Capacity vs. Risk



REWARDS vs. RISK

Clear concerns about the risks and rewards of third-party Cloud services

- **REWARDS:** cost, convenience, and capacity.
- **RISKS:** control, security, privacy, and culpability.

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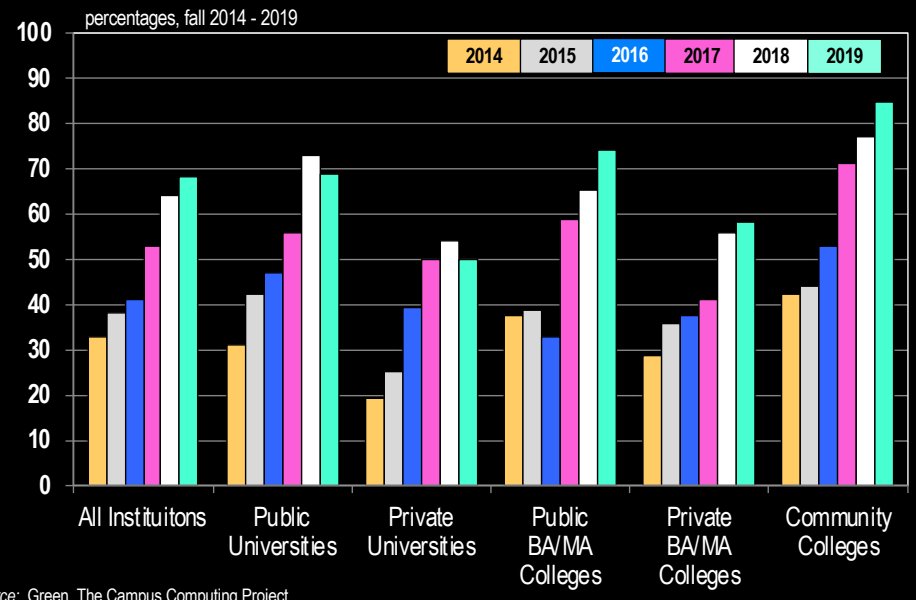
Campus Policy Encouraging Faculty to Use OER Content for Courses



Source: Green, The Campus Computing Project

- Steady gains over time for the formal institutional support for OER course materials
- An estimated 15% of courses now use OER materials (up from 7% in 2016)

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CIOs on OER:

Institutional Support vs. Faculty Ambivalence (Fall 2019)

68%
My campus encourages faculty to use OER content for their courses. (+34 pts. since 2014)

67%
My campus supports faculty efforts to develop OER content or their courses. (+14 pts. vs. 2018)

(pct. agree/strongly agree) 89%
OER course materials and textbooks will be an important source for instructional resources in five years. (+8 pts vs. 2018)

43% (pct. agree/strongly agree)
Faculty at my campus believe that the quality of OER course materials is about the same as comparable commercial products (+7 pts vs. 2018)

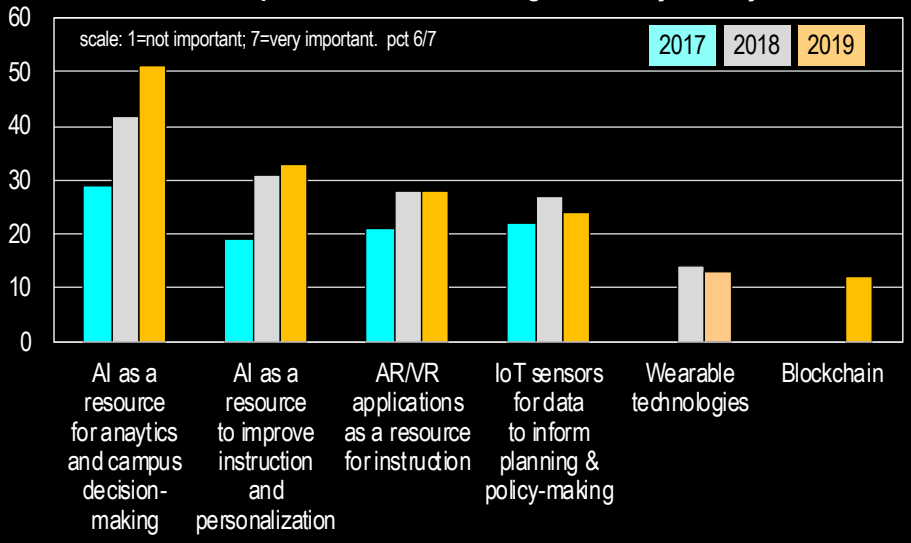
The continuing campus (and policy) conversation about OER centers on student vs. faculty issues:

- **Student issues:** cost and Day One Access
- **Faculty issues**: choice and quality

The Campus Computing Project

The Impending Impact of Emerging Technologies

As you think about the future of emerging technologies at your institution, how important will the following be in five years, by 2024?

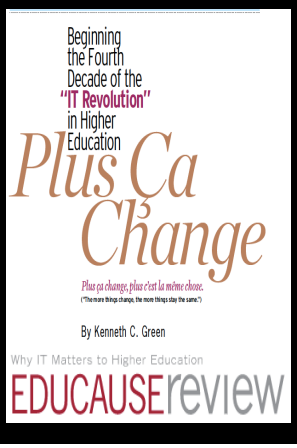


- Early data suggest more initial interest in AI for analytics than instruction
- AI and AR / VR in instruction dependent on decisions of faculty and departments

The Campus Computing Project

30 Years of The Campus Computing Survey

Plus ça change



Great Technological Change

- Hardware
- Software
- Internet
- Wireless
- Mobile
- Analytic Tools
- Social Media

Continuing IT Challenges

- **Assessment and Analytics**
- **IT Training & User Support**
- **Faculty Recognition and Reward**
- **Money / IT Budgets**
- **Managing Expectations**

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THE 2019 CAMPUS COMPUTING SURVEY

	All Institutions	Universities		BA/MA Institutions		Community Colleges
		Public	Private	Public	Private	
Number of Institutions	235	28	12	46	90	59
Does your institution have a special computer use / technology fee or annual / term computer use charge for all students?	49.1	63.0	36.4	77.8	31.5	51.8
Average total annual (full-time) student fee or charge for A/Y 2019-20	$ 283	237	700	206	364	220
How does your institution allocate the student tech fee funds? *(pct.)*						
Primarily as a source of additional money for the core IT budget	73.6	72.2	75.0	74.3	64.0	82.1
Primarily to support new IT services, resources, or initiatives	26.4	27.8	25.0	25.7	36.0	17.9
How does your institution spend the student tech fee funds? *(pct.)*						
Campus computer labs	38.4	57.1	33.3	63.0	16.7	45.8
Enhanced WiFi services	32.1	50.0	25.0	43.5	20.0	35.6
Instructional facilities/resources	30.0	57.1	25.0	50.0	12.2	30.5
Curricular resources for students	13.5	21.4	25.0	17.4	5.6	17.0
Library resources for students	16.5	35.7	8.3	30.4	5.6	15.3
User support services for students	28.3	35.7	8.3	52.2	11.1	37.3
Free/discounted printing services for students	22.8	25.0	16.7	30.4	11.1	35.6
Other IT-related resources and services	32.5	46.4	25.0	45.7	20.0	37.3
Other non-IT resources or services	50.0	50.0	50.0	50.0	50.0	50.0
As you think about institutional priorities for IT resoures and services over the next two-three years, how do you rate rthe imporantace of the following IT issues *(scale: 1=not important; 7=very importance; percentages for 6/7)*						
Upgrading / enhancing data security	83.3	64.3	81.8	86.4	84.3	88.7
Hiring / retaining qualified IT staff	76.8	82.1	72.7	84.4	74.2	71.7
Leveraging IT resources and services to advance the student success/student completion priorities of my institution	72.5	75.0	54.6	91.1	60.7	81.5
Providing adequate user support	70.9	67.9	72.7	86.7	67.1	66.0
Data analysis / learning and managerial analytics	60.3	71.4	63.6	77.8	52.8	51.9
Digital accessibility: compliance with ADA and other mandates for instruction and campus services	57.2	75.0	63.6	60.0	47.2	61.1
Supporting online / distance education courses and programs	53.3	78.6	45.5	53.3	45.5	56.6
Assisting faculty integrate technology into instruction	51.5	60.7	54.6	55.6	44.9	51.9
IT business continuity / IT disaster planning and recovery	49.8	46.4	72.7	55.6	44.3	52.8
Professional development for IT personnel (IT staff and senior IT officers)	48.5	46.4	72.7	63.6	42.1	42.6
Upgrading / replacing the campus network	46.7	50.0	45.5	48.9	43.8	46.3
Leveraging IT resources to reduce the cost of campus operations	46.7	37.0	54.6	54.6	46.6	45.3
Migrating to Cloud computing for core IT infrastructure	46.3	42.9	36.4	62.2	46.1	38.9
Implementing / supporting / upgrading a CRM	41.1	50.0	81.8	42.2	34.8	38.9
Implementing / supporting mobile computing	40.7	39.3	45.5	48.9	34.8	44.4
Upgrading / replacing administrative IT/ERP systems	40.2	35.7	36.4	40.0	37.1	50.0
IT succession planning	32.9	21.4	45.5	42.2	29.6	35.2
Leveraging the potential of adaptive learning applications/platforms in gateway courses	25.9	42.9	27.3	26.7	14.8	33.3
Leveraging IT resources to reduce the cost of instruction	25.1	28.6	18.2	24.4	24.1	27.8
Digital content management	22.1	14.8	20.0	31.1	18.0	24.5
Upgrading / replacing the current campus Learning Mgmt System (LMS)	16.2	14.3	27.3	20.0	11.2	20.4
Launching/supporting competency-based education (CBE) courses and programs	13.8	14.3	18.2	15.6	9.2	17.7
Using/leveraging social media as a resource for instruction	7.5	7.1	18.2	13.6	1.1	11.1
What applications or platforms does your institution use for a lecture capture / video management? *(percentages)*						
None	17.7	3.6	8.3	13.0	25.6	17.0
Brightcove	0.8	7.1	-	-	-	-
D2L Brightspace	6.8	3.6	25.0	10.9	2.2	8.5
Echo360	6.8	7.1	16.7	10.9	7.8	-
Kaltura	18.1	35.7	8.3	28.3	15.6	8.5
Matterhorn	0.4	3.6	-	-	-	-
Mediacore	-	-	-	-	-	-
Panopto	18.1	28.6	33.3	17.4	18.9	10.2
Polycom	6.8	10.7	16.7	10.9	3.3	5.1
Sharestream	1.3	-	-	6.5	-	-
Sonic Foundry (Mediasite)	7.2	14.3	16.7	13.0	1.1	6.8
TechSmith (Camtasia)	19.0	7.1	8.3	32.6	14.4	22.0
Tegrity	1.7	-	-	-	4.4	-
Vbrick	-	-	-	-	-	-
Other	30.0	17.9	8.3	19.6	31.1	45.8

	All Institutions	Universities		BA/MA Institutions		Community Colleges
		Public	Private	Public	Private	
Perspectives on key IT issues affecting my institution *(percentage who agree/strongly agree)*						
Digital curricular resources make learning more efficient and effective for	94.5	92.6	100.0	92.7	95.4	96.2
Digital curricular resources provide a richer and more personalized learning experience than traditional print materials	88.6	96.3	100.0	92.7	87.2	81.1
Adaptive learning technology has great potential to improve learning outcomes for students	96.4	96.2	100.0	97.6	94.1	98.2
Our IT funding has not fully recovered from the budget cuts we have experienced over the past four-six years	67.3	66.7	30.0	73.8	68.6	67.9
Wearable technology will become an important part of our plan to offer IT resources to students	30.5	22.2	30.0	52.4	20.0	33.3
Faculty at my institution believe that the quality Open Source / OER curricular resources is about the same as comparable commercial	43.5	30.8	66.7	51.2	30.2	63.5
Open Source textbooks/OER content will be an important source for instructional resources in five years	89.0	80.8	80.0	92.9	85.9	96.2
Our efforts to "go all digital" with course materials are impeded by the fact that many of our students do not own the digital devices (computers or tablets) they need to access digital content and resources	29.1	14.8	-	42.9	18.6	49.1
We are experiencing *major delays* in our ERP deployment / upgrade / replacement activities	35.8	22.2	60.0	38.1	29.1	48.2
We are experiencing *major cost overruns* or unexpected costs in our ERP replacement / upgrade activities	23.8	7.4	50.0	19.1	20.7	37.3
Outsourcing instructional services (course development, user support, etc.) offers a *viable and effective* strategy for many campuses to launch/expand online courses and programs	44.4	46.2	30.0	50.0	49.4	33.3
Outsourcing instructional services (course development user support etc) offers a *profitable strategy* for many campuses to launch/expand online courses and programs	30.4	16.0	20.0	36.6	36.5	23.5
We have a difficult time retaining IT talent because our salaries and benefits not competitive with off-campus job opportunities	77.5	81.5	60.0	78.6	79.3	74.1
5G cellular networks will provide major benefits for our campus IT	55.4	55.6	50.0	72.5	47.1	56.9
Perspectives on Cloud Computing and Blockchain *(percentage who agree and strongly agree)*						
Cloud computing will play an increasingly important role in our campus ERP / IT strategy.	93.7	88.5	90.0	95.2	94.3	94.4
Cloud computing is an important part of our campus technology plan to reduce IT costs.	57.9	57.7	50.0	71.4	51.2	61.5
Cloud computing services offer a level of data security that equal or exceed the level we can provide with on-campus hosting.	76.5	81.5	40.0	81.0	79.3	71.7
Third-party Cloud services (Amazon, Google, IBM, Microsoft) are an important part of our campus plan to offer high performance computing services	70.6	50.0	75.0	78.6	72.1	72.2
The use of third-party Cloud services (Amazon, Google, IBM, Microsoft) by our faculty and researchers poses a potential risk to data privacy and data	61.4	53.9	50.0	64.3	65.1	57.4
Blockchain technology will dramatically transform the ways institutions manage student data and transcripts	35.0	28.0	44.4	40.5	29.4	40.7
Blockchain technology will play an increasingly important role in our campus IT strategy	46.3	30.8	66.7	50.0	42.4	53.7
Percentage of your faculty have taught an online course (80 pct of content online) over the past two years:						
Full-time faculty	24.2	23.8	22.9	21.2	16.5	40.4
Part-time faculty	28.0	34.5	30.0	27.9	20.7	37.1
Percentage of classes that use:						
LMS / course management tools for online course resources	74.7	77.3	75.5	73.1	72.9	77.6
Audio lecture capture	11.2	8.7	24.2	13.3	9.9	10.5
Video lecture capture	14.2	22.0	29.7	14.3	11.7	12.1
"Clickers" / classroom response system	10.5	11.9	25.7	12.1	8.8	8.6
Anti-plagiarism software for written assignment	40.6	39.1	33.6	40.3	40.0	43.4
Online proctoring / monitoring applications	14.6	20.9	18.5	12.4	10.5	20.2
Open Source / OER curricular resources	15.2	12.2	14.9	13.9	11.4	23.1
Adaptive learning tools in developmental and general education courses	9.6	6.4	16.4	10.0	5.9	15.0
Courseware in general education classes	18.0	16.7	19.1	21.9	11.2	26.7
Gaming technologies	5.2	6.0	6.3	5.8	4.2	5.6

	All Institutions	Universities		BA/MA Institutions		Community Colleges
		Public	Private	Public	Private	
Campus Policy & Practice: does your campus / institution *(percentages)*						
Have a formal program to recognize and reward the use of information technology as part of the routine faculty review and promotion process?	10.1	16.0	20.0	9.1	7.1	11.5
Have a formal program to assess the impact of IT on instruction and learning outcomes?	12.1	26.9	30.0	9.1	10.3	7.4
Have a formal policy regarding the ownership of web-based curricular resources and intellectual property developed by faculty?	66.5	88.5	70.0	67.4	58.6	69.8
Have a formal policy for students to record (audio/video) class lectures, presentations, and discussions	18.1	23.1	10.0	6.8	26.7	13.2
Inform / counsel students about privacy issues related to social networking sites (Facebook, LinkedIn, etc.)?	56.4	65.4	70.0	58.1	59.8	42.0
Encourage the use of the Creative Commons license on digital works?	54.8	57.7	30.0	48.8	56.3	58.5
Encourage faculty to use Open Source / OER instructional content for their courses?	68.3	69.2	50.0	74.4	57.5	84.9
Support faculty efforts to develop Open Source / OER instructional content for their courses?	67.5	61.5	50.0	64.3	49.4	81.1
Have a campus / department license for anti-plagiarism software (e.g., Turnitin, SafeAssign, VeriCite)?	81.2	88.9	70.0	90.7	71.3	87.0
Outsource various aspects of your online program activities (recruitment, course development, student services)?	30.2	40.7	50.0	34.1	31.0	17.3
Use a proctoring application to monitor online exams?	60.9	88.5	60.0	63.6	43.0	75.0
Use chatbots on institutional or departmental websites?	24.8	37.0	50.0	37.2	12.6	24.5
Currently comply with the Payment Card Industry Data Security Standard (PCI-DSS)	91.9	100.0	100.0	88.4	90.6	90.7
Currently comply with Gramm-Leach-Bliley (GLBA) requirements on consumer financial information?	84.2	96.3	100.0	86.1	88.4	66.7
Currently comply with European Union's General Data Protection Requirements (GDPR)?	56.8	50.0	80.0	55.8	62.8	47.2
When did your institution develop / last update the campus plan for the IT issues listed below? *(percentages)*						
Overall campus IT plan						
past 12 months	44.7	53.9	60.0	47.5	36.1	49.1
13 to 24 months ago	20.7	15.4	10.0	22.5	25.6	17.0
more than 24 months ago	30.0	30.8	30.0	22.5	32.6	30.2
Using IT to enhance instruction and learning						
past 12 months	46.1	46.2	50.0	48.8	40.0	54.7
13 to 24 months ago	22.1	26.9	20.0	19.5	25.9	17.0
more than 24 months ago	20.3	23.1	20.0	9.8	23.5	20.8
Online / Distance Education						
past 12 months	38.3	48.0	50.0	43.9	33.7	35.9
13 to 24 months ago	18.0	20.0	10.0	19.5	18.6	17.0
more than 24 months ago	19.8	32.0	20.0	14.6	11.6	30.2
Enterprise architecture						
past 12 months	46.8	41.7	40.0	51.2	45.4	50.9
13 to 24 months ago	22.2	33.3	30.0	26.8	20.9	13.2
more than 24 months ago	19.4	25.0	30.0	7.3	19.8	22.6
IT security						
past 12 months	76.4	63.0	70.0	80.5	79.1	75.9
13 to 24 months ago	13.6	29.6	30.0	14.6	11.6	5.6
more than 24 months ago	6.4	7.4	-	-	5.8	13.0
Campus networks (including wireless)						
past 12 months	65.0	61.5	60.0	61.0	67.1	69.8
13 to 24 months ago	20.3	19.2	40.0	29.3	16.5	13.2
more than 24 months ago	11.5	19.2	-	4.9	11.8	15.1
High performance computing						
past 12 months	24.8	53.9	60.0	22.0	15.1	22.6
13 to 24 months ago	10.6	23.1	10.0	22.0	2.3	9.4
more than 24 months ago	10.1	23.1	-	4.9	12.8	5.7
IT disaster recovery						
past 12 months	55.3	63.0	60.0	68.3	45.4	56.6
13 to 24 months ago	17.8	11.1	10.0	17.1	22.1	17.0
more than 24 months ago	21.9	25.9	30.0	12.2	24.4	20.8
Cloud computing						
past 12 months	53.7	65.4	50.0	65.9	43.2	55.6
13 to 24 months ago	20.6	15.4	40.0	9.8	27.2	18.5
more than 24 months ago	12.2	15.4	10.0	9.8	9.9	14.8

	All Institutions	Universities		BA/MA Institutions		Community Colleges
		Public	Private	Public	Private	
Updating campus plans *(continued - percentages)*						
Mobile computing						
past 12 months	42.5	34.6	40.0	51.2	32.6	55.6
13 to 24 months ago	21.9	23.1	10.0	19.5	24.4	22.2
more than 24 months ago	18.3	30.8	30.0	12.2	18.6	13.0
Identity and access management						
past 12 months	55.3	57.7	50.0	65.9	51.2	53.7
13 to 24 months ago	19.2	19.2	20.0	17.1	22.1	16.7
more than 24 months ago	15.1	23.1	20.0	7.3	12.8	18.5
Emergency communications / notification system(s)						
past 12 months	53.4	23.1	60.0	58.5	54.7	61.1
13 to 24 months ago	23.7	42.3	20.0	26.8	19.8	20.4
more than 24 months ago	17.4	30.8	20.0	4.9	18.6	16.7
How would you rate your institutions's technology infrastructure *(scale: 1=poor; 7= excellent; percentages for 6/7)*						
Computer networks and data communication	68.6	67.9	72.7	57.8	78.7	61.1
Telecommunications and phone system	45.8	42.9	50.0	55.6	41.6	45.3
WiFi / wireless networks	53.7	57.1	45.5	53.3	56.2	51.9
User support services	46.5	50.0	63.6	42.2	40.9	53.7
IT and digital resources to support teaching and instruction	29.3	35.7	36.4	24.4	28.1	31.5
ERP / enterprise systems	17.2	11.1	27.3	22.2	15.7	17.0
CRM resources / deployment	16.3	17.9	18.2	15.6	21.6	5.7
Learning Management System (LMS)	47.8	60.7	27.3	51.1	44.9	47.2
Multimedia / AV enabled classrooms	44.1	46.4	27.3	53.3	37.1	51.9
Video capture and services / delivery infrastructure	17.6	35.7	18.2	20.0	14.9	11.1
Campus web site services	26.8	39.3	9.1	31.1	27.3	20.4
Student portal	20.9	25.0	9.1	34.1	17.2	17.0
IT security (network attacks, secure data bases, identity mgmt, etc)	34.5	39.3	63.6	40.0	23.6	40.7
Disaster planning	19.7	35.7	27.3	4.4	15.7	29.6
IT training for faculty	14.4	17.9	18.2	15.6	11.2	16.7
IT training for students	7.9	10.7	18.2	8.9	5.6	7.6
Mobile apps / services for students faculty & staff	10.2	10.7	9.1	17.8	4.6	13.2
IT accessibility: IT resources and services for users with disabilities	20.5	39.3	27.3	11.1	13.5	29.6
How would you the effectiveness your institution's investment in technology resources and services *(scale: 1=not effective; 7= very effective; pct for 6/7)*						
Academic support services (including advising and retention efforts)	36.2	53.9	54.6	36.4	34.1	28.3
Alumni activities / engagement	18.2	29.6	20.0	18.6	19.8	8.7
Administrative information systems and operations	32.0	33.3	27.3	36.4	28.4	34.0
Data analysis and learning/managerial analytics	21.8	37.0	20.0	27.9	16.5	18.9
Development efforts	20.7	37.0	36.4	17.1	21.7	10.2
Faculty research and scholarship	16.1	40.7	30.0	14.0	12.2	5.7
Instructional support services for faculty	35.9	42.3	54.6	32.6	32.2	38.9
Library resources and services	43.7	56.0	30.0	41.5	42.2	44.2
On-campus teaching and instruction	48.0	59.3	45.5	44.2	47.1	49.1
Online courses and programs	34.0	44.0	50.0	28.6	26.4	41.5
Student recruitment	43.8	56.0	45.5	33.3	54.6	27.5
Student services	33.6	34.6	45.5	34.9	28.7	37.0
Student success / student completion initiatives	37.6	46.2	36.4	39.5	36.1	34.0
Please indicate how important computing / information technology issues and resources will be in the overall campus IT environment over the next 2-3 years *(scale: 1=not important; 7= very important; percentages for 6/7.*						
Assessing the benefits of existing investments in computing and technology resources	56.9	54.2	60.0	61.0	53.0	62.8
Providing incentives and rewards for faculty to support technology integration into the curriculum	15.2	4.4	11.1	19.5	15.3	18.0
Sharing digital resources with other campuses / institutions	24.0	26.1	20.0	39.0	12.9	31.4
Helping our IT personnel stay current with new technologies	64.9	79.2	70.0	68.3	57.1	68.0
IT governance	54.3	66.7	40.0	61.0	50.0	52.9
Surveying students and faculty about IT issues and services	43.7	25.0	50.0	56.1	37.7	52.9
Assessing the return on investment for IT spending / resources	42.5	39.1	50.0	51.2	37.7	45.1
Using Open Source tools and applications	25.0	25.0	30.0	26.8	17.7	36.0
Promoting the use of Open Education Resource (OER) course materials	37.3	45.8	20.0	46.3	23.5	54.0
Managing campus video resources (lectures, presentation, etc.)	27.7	33.3	40.0	34.2	17.7	35.3
Implementing Federated Identity Management	43.6	70.8	40.0	46.3	34.5	46.0
Operating with a single student user profile for all institutional applications	48.3	54.2	50.0	61.0	38.1	54.0
Implementing new technology tools in our continuing ed and workforce development programs	31.3	37.5	30.0	34.2	19.5	46.9
Using learning analytics to support student success initiatives	60.1	95.8	50.0	68.3	49.4	56.9
Using learning analytics to improve instructor, course, and program effectivene	52.1	79.2	60.0	56.1	40.0	53.1
Using social media to support student success initiatives	15.6	8.3	20.0	17.1	8.2	30.0

THE 2019 CAMPUS COMPUTING SURVEY

	All Institutions	Universities		BA/MA Institutions		Community Colleges
		Public	Private	Public	Private	
Central budget for IT services, 2019-20	$ 10,736,634	39,744,134	16,334,191	8,702,568	4,628,263	6,895,667
Central IT services as percentage of total institutional computing/IT expenditures for 2019-20	73.1	56.1	46.5	75.4	82.8	67.2
Total computing/IT expenditures as a percentage of the total institutional budget for 2019-20	8.5	7.8	17.0	6.1	6.7	11.5
Percentage of campuses experiencing a budget cut for central IT services this current academic year, 2019-20	41.2	34.8	50.0	32.5	41.0	51.0
Percentage of budget that was cut	7.4	2.3	4.8	8.7	8.4	7.6
Percentage of campuses that experienced a mid-year budget cut for central IT services this past academic year, 2018-19	14.4	8.7	-	12.8	21.7	9.8
Percentage of budget that was cut	5.9	1.5		2.0	6.1	10.0
Median annual expenditures for software licensing and maintenance fees paid to vendors for software and services for the following ERP, administrative, and instructional applications systems for 2019-20						
Alumni / Advancement / Development	37,000	182,500	76,702	35,000	50,000	10,000
Analytic applications intended to support student success initiatives	31,000	300,000	60,959	106,000	13,500	30,000
Courseware / Digital course supplements	5,000	185,053	35,000	12,500	1,000	5,000
CRM	50,000	106,522	38,000	50,000	50,000	16,500
Document imaging and managements	32,000	78,892	50,000	62,500	20,000	28,500
Finance / Accounting	57,200	175,000	95,655	100,000	48,000	60,000
Emergency Notification Services	10,000	35,000	30,000	15,000	7,750	10,000
Grants and Research Management		78,180	50,000	14,000	-	-
Learning management systems	60,000	367,500	75,000	150,000	40,000	50,000
Lecture capture and campus video management	15,000	115,000	50,000	19,484	10,000	10,000
Library system management	30,000	137,000	64,000	45,000	20,000	17,000
Human resources (recruitment)	19,000	77,488	37,500	27,500	12,000	20,000
Human resources (HR records and payroll)	50,000	224,916	74,559	56,000	33,803	45,000
Student Information System	150,000	281,592	125,000	150,000	125,000	150,000
Senior officials at my campus are well-informed about digital learning and digital transformation *(scale: 1=not informed; 7=well informed; pct for 6/7)*						
President / Chief Excecutive Officer (CEO)	39.5	50.0	30.0	50.0	26.8	49.0
Provost / Chief Academic Officer (CAO)	44.8	66.7	40.0	37.5	39.7	50.0
Chief Financial / Business Officer (CFO)	39.3	63.6	30.0	30.0	35.4	44.0
Senior officials at my campus are engaged in digital learning and digital transformation issues *(scale: 1=not engaged; 7=very engaged; pct for 6/7)*						
President / Chief Excecutive Officer (CEO)	32.4	54.6	20.0	42.5	23.5	30.6
Provost / Chief Academic Officer (CAO)	42.2	63.6	40.0	40.0	38.3	42.9
Chief Financial / Business Officer (CFO)	30.9	66.7	20.0	32.5	24.4	28.6
Has your institution reorganized computing / information service units within the past 2 years?*						
Central IT services	42.7	56.5	30.0	50.0	46.9	28.0
Libraries	16.8	26.1	20.0	15.0	17.7	12.2
Telecom	20.6	34.8	20.0	37.5	16.3	8.2
Do you anticipate a reorganization of computing / information services within the next 2 years?*						
Central IT services	44.9	65.2	20.0	59.0	33.3	48.0
Libraries	22.7	22.7	30.0	30.0	21.3	16.3
Telecom	27.4	47.8	20.0	38.5	23.1	18.4
Percentage of campuses that reorganized IT units in the past two years and expect to reorganize IT units again in the next two years						
Central IT services	54.9	60.7	33.3	63.0	56.7	47.5
Libraries	26.6	21.4	33.3	30.4	27.8	22.0
Telecom	30.8	46.4	25.0	43.5	28.9	18.6
What academic and operational units report to the CIO / CTO?*						
Academic computing	73.0	78.6	58.3	78.3	74.4	66.1
Administrative computing	82.3	78.6	75.0	82.6	88.9	74.6
Libraries	11.4	10.7	8.3	10.9	12.2	10.2
Distance / online education programs	16.0	14.3	33.3	17.4	13.3	15.3
Institutional research / analytics	12.2	7.1	8.3	21.7	10.0	10.2
Telecommunications	82.3	85.7	66.7	80.4	85.6	79.7
Media center / services	62.0	32.1	50.0	63.0	72.2	61.0
Campus center(s) for teaching and learning (TLT center, etc)	16.9	10.7	33.3	17.4	18.9	13.6
Does your campus have a *(percentage reporting yes)*						
Chief / senior learning or instructional officer	35.9	42.9	41.7	39.1	26.7	44.1
Chief / senior IT security officer	48.1	78.6	75.0	58.7	33.3	44.1
Chief / senior data / analytics officer	35.4	46.4	33.3	43.5	24.4	42.4
Chief / senior privacy officer	20.3	21.4	25.0	23.9	17.8	20.3
Chief / senior officer for online education	31.7	60.7	41.7	21.7	23.3	37.3
Chief / senior officer for innovation	17.3	39.3	33.3	15.2	14.4	10.2

	All Institutions	Universities		BA/MA Institutions		Community Colleges
		Public	Private	Public	Private	
Which statement below best describes the way your institution manages digital accessibility issues and ADA compliance requirements for IT resources and services? *(percentages)*						
Individual campus units and academic departments are responsible, we don't have a set of institutional guidelines and don't monitor activities	15.9	4.2	-	10.0	22.0	20.4
No centralized responsibility or management, but departments can request assistance on accessibility from a support center (not required)	22.7	16.7	20.0	27.5	25.6	16.3
A central office or support center is responsible for accessibility support and compliance and works with operating units and academic programs on this issue.	61.4	79.2	80.0	62.5	52.4	63.3
Looking ahead, what's the likelihood that your institution will migrate (or has already migrated) to one or more *Cloud/SaaS applications* five years from now (by fall 2024)? *(scale score: 1=not likely; 7-=very likely; pct for 6/7)*						
Alumni / Development System	66.7	69.6	70.0	72.5	71.1	53.1
Business Intelligence / Big Data analytics	46.8	59.1	20.0	56.4	41.5	50.0
Collaboration Platforms / Applications	69.0	68.2	50.0	80.0	68.7	65.2
Content Management System	56.8	56.5	40.0	55.0	56.6	64.6
Continuing Education Management Platform	44.2	56.5	50.0	51.3	29.0	57.5
CRM services	77.0	87.0	50.0	82.5	78.8	71.4
ePortfolio System	51.0	59.1	33.3	57.5	58.8	31.9
Financial System	50.5	52.2	30.0	62.5	47.0	50.0
HR System	58.2	65.2	30.0	67.5	56.6	56.0
Learning analytics	49.8	72.7	20.0	65.0	41.8	47.9
Learning Management System	85.0	95.7	90.0	90.0	78.3	87.8
Lecture Capture	53.0	65.2	50.0	56.4	55.0	43.8
Video management	52.5	68.2	50.0	60.0	51.3	43.8
Research / Grants Management System	38.2	78.3	30.0	50.0	30.3	25.0
Student Information System	49.8	47.8	20.0	50.0	50.6	55.1
VoIP	43.2	47.8	60.0	40.0	42.7	40.8
Looking ahead, what's the likelihood that your institution will migrate (or has already migrated) to one or more *Open Source* applications five years from now (by fall 2024)? *(scale score: 1=not likely; 7-=very likely; pct for 6/7)*						
Alumni / Development System	2.0	-	10.0	2.6	1.3	2.2
Business Intelligence / Big Data analytics	3.1	-	-	5.1	2.5	4.4
Collaboration Platforms / Applications	4.1	5.0	-	2.6	6.3	2.2
Continuing Education Management Platform	3.1	9.5	-	2.6	2.6	2.2
CRM services	2.0	-	-	2.6	3.8	-
ePortfolio System	5.6	4.6	-	7.7	6.3	2.2
Financial System	2.0	13.6	-	2.6	-	-
HR System	2.0	9.1	-	5.1	-	-
Learning analytics	1.5	-	-	2.6	-	4.3
Learning Management System	16.6	9.1	20.0	10.3	26.3	6.5
Lecture Capture	2.5	4.8	-	2.6	1.3	4.4
Video management	3.5	9.5	-	2.6	2.5	4.3
Research / Grants Management System	1.5	-	-	5.1	1.3	-
Student Information System	1.5	9.1	-	2.6	-	-
As you think about the future role of *emerging technologies*, which technologies do you think will be important for your institution five years from now, by fall 2024? *(scale score: 1=not important; 7-=very important; pct for 6/7)*						
Artificial intelligence (AI) as a resource to improve instruction (personalization,	33.2	47.8	30.0	30.0	22.4	47.1
Artificial intelligence (AI) as a resource for analytics and decision-making/mgm	50.7	69.6	60.0	52.5	38.8	58.8
AR / VR applications as a resource for instruction	28.0	30.4	40.0	30.0	22.4	31.4
Internet of Things (IoT) sensors for data to inform planning and policy decision	24.4	34.8	10.0	35.0	18.8	24.5
Wearable technologies	12.8	4.4	20.0	25.0	8.2	13.7
Blockchain	11.9	13.0	10.0	10.0	8.3	19.6

29 July 2019

Digital Content vs. Digital Access

Going Digital or *Digital First* strategies for course materials, intended to reduce costs and enhance first day of class access, may actually disadvantage large numbers students who are the intended beneficiaries of these initiatives.

Kenneth C. Green

Pearson's recent "digital first" announcement regarding collegiate curricular materials follows Cengage's move some 18 months ago to promote digital curricular content with a one price, "all you can read" strategy. Also playing an increasingly larger role in the conversation about digital course materials is the OER content from both non-profit (e.g., MIT Open Courseware, Merlot, and OpenStax, among others) and for-profit providers (e.g., Lumen Learning) that promote OER, primarily in digital formats.

Pearson's announcement this summer follows by seven years the 2012 proclamation by then McGraw-Hill Higher Education president Brian Kibby of the need for higher ed curricular content to be all digital by 2015. (*Spoiler alert:* that did not happen – at McGraw-Hill or elsewhere.) Still, there is much that should be attractive, indeed compelling, about an "all digital" strategy – for students and for the content providers.

On the student side, all digital should reduce the cost of course content. Also important is that the all digital discussion is closely linked to the Day One course content efforts that try to provide students with access to course materials on the first day of their classes.

For the providers, digital will reduce some production costs related to printing and shipping books. However, as digital materials increasing encompass other supplements and different kinds of development costs, some of the projected savings may be transactional, not actual.

Interestingly, the Pearson announcement also suggests the CQI – *Continuous Quality Improvement* – strategy long deployed across many industries, including the software industry. Rather than let calendar or other issues drive the release of product enhancements, CQI advocates for *doing it ASAP*, rather than waiting. As reported by Lindsay McKenzie at *Inside Higher Ed* on July 16th, Pearson intends to "update [digital materials] on an ongoing basis -- reflecting new research developments, technology breakthroughs and the latest pedagogical trends."

All good, it would seem. These strategies suggest lower cost, "fresher" (or constantly improving) curricular content along with better options for Day One access. After all, textbook prices are the low-hanging fruit (and publishers the villains) in one component of the continuing public anger and angst about college costs. So strategies that promise to reduce costs and enhance Day One access are good things.

And yet, *going digital* or *digital first* strategies may actually disadvantage large numbers of low-income, full- and part-time undergraduates, primarily enrolled in community colleges or public four-year comprehensives, who are the intended beneficiaries of these initiatives. As shown below, there is consistent and significant concern from faculty, from provosts/Chief Academic Officers, and from CIOs, about digital access as a key issue in the process of going digital.

Digital Access. Over the past three years I have conducted three national surveys of faculty, provosts/CAOs, and CIOs focused, in part "going digital." The consistent message about digital content from all three surveys is a clear concern that many (low-income) students do not own the necessary digital devices required to access digital textbooks and related digital course content.

- *The 2016 Going Digital Survey*. Over a fourth (27 percent) of the 2900 surveyed faculty across 29 two- and four-year (primarily public) colleges and universities reported that their students *do not* have easy access to tech resources that would allow them to make full use of digital content.
- *The 2017 Provosts, Pedagogy, and Digital Learning Survey.* Provosts and Chief Academic Officers overwhelmingly agreed that "digital curricular resources make learning more efficient and effective for students" (86 percent agree/strongly, agree). However, fully two-fifths (40 percent) also report that "our efforts to go 'all digital' with course

materials are impeded by the fact that many of our students do not own the digital devices (computers or tablets) they need to access digital content and resources."

- *The 2018 Campus Computing Survey.* Like CAOs, CIOs are also effusive about the potential of digital course content: 94 percent agreed/strongly agreed that ""digital curricular resources make learning more efficient and effective for students." concurrently, almost a third of CIOs (29 percent; 45 percent in community colleges) expressed concern that "our efforts to go 'all digital' with course materials are impeded by the fact that many of our students do not own the digital devices (computers or tablets) they need to access digital content and resources."

Obviously the price of a computer is one of the costs of college attendance for presumably all students. Indeed, most of us might stipulate that a computer is an *essential resource* for college students – and has been for several years (several decades?).

And yet, although campus financial aid budgets allocate money for textbooks and course materials (about $1240-1440 annually for undergraduates according to recent numbers from the College Board), the financial aid calculation at almost all institutions *does not* include the cost of a computer. My recent efforts to spot check financial aid budgets at some 20 public and private four-year colleges and universities –including the elite, the expensive, and also the less expensive – found no institution that included the cost a computer in the undergraduate financial aid budget.

Resolution and Remedy? Alas, there appear to be no easy solutions to the challenge of digital access for students who need digital platforms. In theory, adding a computer to the financial aid budget might help some students, although it also might simply increase their loan obligations, already a very big and contentious issue that involves public policy (and potentially election year politics: free tuition *and* free computers?). Too, were campuses to add computers to the cost of attendance calculation, this would no doubt increase financial budgets (and contribute to rising discount rates) at many institutions as students qualify for additional financial aid.

So perhaps one strategy here is to crowdsource the discussion. We can define the problem. The question is how does – or will, or should – your institution address and resolve the issue of access to digital course content for students who cannot afford a computer?

Please post your comments about an institution strategy – or what you think your campus should do – to address the digital access issue. *Thanks!*

Kenneth C. Green, the Digital Tweed blogger at *INSIDE HIGHER ED,* is the founding director of The Campus Computing Project, the largest continuing study of the role of computing, eLearning, and information technology in American higher education.

Provosts as Digital Leaders

Kenneth C. Green

Four decades into the "technology revolution in higher education" that began with the arrival of PCs and Macs on college campuses in the early/mid-1980s, provosts/chief academic officers (CAOs) are slowing (but significantly) emerging as increasingly influential (and essential) digital leaders at their institutions.

The academic leaders currently serving as (or aspiring to be) as provosts/CAOs have come of age – personally, professorially, and professionally – with instructional and administrative technologies that are now ubiquitous across higher education. Indeed, some the undergraduates of 1984 and 1985 who purchased the first generation of dramatically discounted personal computers sold to college students may now be among the age "55 and 60 something" faculty and administrators at campuses across the country. (Are you old enough to remember the $1000 Macs sold in college bookstores in decades ago? Were you one of the students who *bought* a $1000 Mac in 1984 or 1985?)

Given the history of campus IT initiatives over the past four decades, the CAOs now engaged digital pedagogy initiatives could well be described as the *third wave* of digital leaders.

In response to the arrival of microcomputers four decades ago, the initial wave of *institutional* digital leaders were clearly techies. As a group, they were largely white guys with engineering or computer science degrees. The technology slowly migrating from the computing center into campus labs and classrooms during this period was new, challenging, laden with potential, fueled by great aspirations – and was also (and often) problematic. (User friendly DOS, anyone??) The reasonable assumption was that IT leadership required technical expertise: *ergo,* the techies emerged as campus IT leaders. The techies understood these "complex and difficult" technological issues and would, presumably, provide the leadership required to navigate these new IT challenges and also explain these issues and technologies to the rest of us.

Beginning in the early and mid-1990s, we saw the slow emergence of the second-wave digital leaders. These men and women were academics who migrated *into technology* from (non-technology) disciplines. They were often current (or recent) faculty drawn to the compelling potential of technology and digital learning as a resource for instruction and scholarship in their individual disciplines. The second wave leaders understood that the key technology challenges confronting their institutions were not, *per se*, about technology. Rather, the second wave leaders recognized that the key tech issues for most campuses involved planning, policy, and funding. They focused on leveraging technology resources to address *operational issues* that included institutional strategy, digital transformation, instructional priorities and opportunities, administrative systems, and support services.

And many campuses now have provosts emerging as the third wave of digital leadership. CAOs as third wave digital leaders *do not* supplant the CIO, but rather complement and supplement that role. Focused on student success, institutional impacts and outcomes, and digital learning, the emerging provost/CAO engagement and leadership with digital learning and IT understandably reflects the *programmatic* responsibilities and priorities of the CAO office, as opposed to the operational responsibilities of CIOs.

There are a number of ways to explain the rising role of CAOs as digital leaders. In some ways it was perhaps inevitable. Compared to the early days of the "tech revolution," today's CAOs came of age – personally, professionally and professorially – with the consumer and campus technologies which are ubiquitous.

There is also the rising recognition of provosts/CAOs as critical institutional change agents. Academic programs and related operations—teaching, learning, and scholarship—traditionally are the domain of the provost/CAO. Indeed, scholars of higher education and campus culture view CAO engagement and leadership as essential for any major changes in academic strategy, institutional mission, or other related initiatives. As noted in "The Path to Change Runs Through the Provost's Office" (*Chronicle of Higher Education,* 2015), "if a campus is going to pursue new priorities, fix systemic problems, or adopt innovation on a broad scale, a provost will most likely be directing the charge."

Additionally, the student success movement has also been catalyst for the rising interest in and engagement with digital learning and digital transformation issues. Provosts sit at the intersection of the factors and forces that fuel the student success movement: accountability, analytics, academic programs, pedagogy, retention and degree completion, and learning outcomes. As we begin to see digital technologies offer empirical evidence of impact and effectiveness, particularly in gateway courses, it is not surprising that digital learning would become an interest of and priority for CAOs.

These third wave issues were among the catalysts for the very successful (if sadly short-lived) Digital Fellows Program funded by the Bill & Melinda Gates Foundation. The two-year fellowship provided a journey of digital discovery and professional development for some 30 provosts/CAOs who wanted to learn more about the potential of digital pedagogy and leverage their leadership position to help their campus scale instructional interventions and digital learning, focused on gateway courses.

Among the Digital Fellows program participants and also among the provosts/CAOs at other institutions who lead digital pedagogy initiatives, there is growing recognition that "going digital" requires faculty and departments to *build or bake in* rather than *bolt on.* In other words, simply appending digital resources to current syllabi is not an appropriate or necessarily effective strategy to leverage digital pedagogy. Rather, the conversation about "going digital" involves a larger—and for many CAOs and their institutions, long-overdue—discussion about course redesign: how students (of all ages and backgrounds) learn in this digital age, what they learn, and which resources and experiences support and enhance their learning. (Please click here for additional information about the Digital Fellows Program. I served as the director of this project.)

Consequently, "going digital" requires a thoughtful, long-term strategy focused on both initial implementation and efforts to scale -- within and across academic programs. Below are some of the key "attention must be paid" challenges that confront CAOs who are (or aspire to be) digital leaders.

- *Innovation Requires Infrastructure.* The literature on the diffusion of innovation tells us that innovation requires infrastructure. The infrastructure supporting digital pedagogy goes beyond digital applications to include significant user support for faculty innovators, instructional designers, and the departments that commit to the thoughtful deployment of digital instructional resources.
- *Assessment is Essential.* Data from the annual Campus Computing Survey confirm that most campuses do not "have a formal program to assess the impact of IT in instruction and learning outcomes." If we hope to move forward with digital pedagogy, we must have good data and empirical evidence if we are to know what we have done well – and what we must do better.
- *Students Must Have Access to Digital Platforms.* As noted in last week's *Digital Tweed* post, Digital Content vs. Digital Access, significant numbers of provosts, CIOs, and faculty report that campus efforts to deploy digital pedagogies are impeded because "many of our students do not own the digital devices (computers or tablets) they need to access digital content and resources." Consequently, going digital – for content and pedagogy – must also address digital access.
- *Faculty Require Recognition and Reward.* Data from The Campus Computing Project reveal that the vast majority of the two-and four-year American colleges and universities *have not* expanded the algorithm for review and promotion to include faculty efforts at instructional innovation and technology. Provosts are in a unique leadership position to provide recognition and reward for faculty who want to include digital pedagogy as part of their scholarly portfolios.
- *Thinking Long and Large.* CAOs should void the temptation for *ad hoc* deployments that are not linked to larger, long-term efforts and goals. Digital leaders should not succumb to the *ad hocery* of the short-term but rather must focus on long-term strategies and opportunities.

Higher education has long-harbored great aspirations for the potential of information technology and digital resources to enhance pedagogy and transform the learning experience. And we now have a growing body of both empirical evidence *and* institutional experience confirming that there are real opportunities to leverage digital pedagogies and resources in gateway and other courses that will enhance student learning and improve both student and institutional outcomes. Provosts/CAOs should be actively involved in leading these initiatives.

ALSO OF POTENTIAL INTEREST:

- Episode #52 of the TOPcast podcast from the University of Central Florida, titled "Higher Ed's Third Wave of Digital Leaders." I join UCF's Tom Cavanagh and Kelvin Thompson for a conversation about the evolving nature of leadership in higher ed's technology-mediated teaching and learning initiatives. A key theme is the sustainability of digital learning efforts.
- The *EDUCAUSE Review* (February 2019): Green and Hatkoff, "Exploring the CAO Role in Digital Learning."
- *Digital Tweed.* Innovation and the Fear of Tying (July 2017)

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