EDUCAUSE Annual Conference 2022

Visits to Colorado University of Boulder, Colorado Community College System, Community College of Denver & Internet2

French Delegation Report

Forewords

For the ninth consecutive year, a French Delegation has been formed to attend the annual EDUCAUSE conference. This initiative, which has been underway since 2013, brings together complementary profiles from the Digital world of French Higher Education community. We hope that this opening will provide sources of inspiration and points of comparison, as well as vectors for promoting existing or upcoming projects.

Thus, from an initial philosophy of simple participation that prevailed during the first years of this Delegation, we have progressively moved to a more active logic, at various levels. More than 15 presentations accepted for the different EDUCAUSE conferences on several academic topics have thus been given by members of our group since 2016. In addition, members of the Delegation's steering committee are actively involved in the life of EDUCAUSE as members of the panel of experts gathered for the EDUCAUSE Horizon Report, as members of several Community Groups (XR and Learning Spaces in particular), or as writers of reference articles and translators of tools. This involvement also reflects itself in the organization of the EDUCAUSE Annual Conferences and EDUCAUSE Learning Initiative Annual Meetings, for which we are not only mobilized each year as proposal reviewers, but also as members of the respective program committees (in 2019 and 2023).

The recognition of these different levels of involvement has allowed us to build a privileged relationship with EDUCAUSE and in particular its executive members (President, Vice-Presidents and Directors). Our actions have also given us significant visibility in the North American academic community and beyond, which has led to the settlement of formal collaborations, some of which are long term. In particular, various cooperations are being established with the EDUCAUSE Japanese Delegation.

These different approaches contribute to reach our fundamental goals: exchange, inform, and share in order to support the development of digital in Higher Education.

Our traditional restitution is a concrete expression of this desire, and has become a major annual event, which we know being appreciated. As for the accompanying report, it has an ever-increasing international audience, which is supported in particular by an English translation that we have quickly put into effect. Outside of Europe, it is awaited and read every year in the United States, Canada, Japan, Singapore, Australia and New Zealand.

This new edition of the report follows the restitution held in Paris on January 27, 2023. It covers the different workshops followed during the EDUCAUSE conference held in October 2022 in Denver, as well as the four visits that the return to face-to-face meetings allowed us to organize again. It can also be completed by the different tweets posted by the Delegation under the #EDU22fr hashtag.

We wish you a pleasant and informative reading.

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French Delegation 2022

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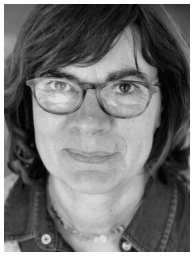

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Introduction & Trends of Higher Education in US

Laurent Flory

The 2022 edition marked the return of the French Delegation to EDUCAUSE in the USA, following the reopening of borders. Most of the Delegation was able to physically attend the conference held in Denver, Colorado, adjacent to EDUCAUSE headquarters, while a colleague participated in the online version a week later. The in-person edition provided the Delegation with an opportunity to renew its interest in exciting site visits, which are detailed in this report. This year, the Delegation expanded its scope beyond major universities, which are often the most successful and renowned, to include community colleges. These two-year associate degree institutions are similar to French IUTs, with a professional orientation and much lower tuition costs[1] than traditional universities. Their main mission is to provide access to higher education for underrepresented minorities[2] and are often linked to local economy skills needs. They also offer two additional years to obtain a bachelor's degree and provide gateways to join universities for further studies.

As with every report, this introduction presents the Delegation's biased vision of higher education and research in the United States. It also provides context within the North American political, economic, and societal context.

On the political front

On the political front the 2022 edition of the midterm elections occurred in a highly polarized political climate, with the lingering effects of the Trump presidency still being felt. The "grand old party" continues to be heavily influenced, if not controlled, by the former president. During the midterms campaign, which typically results in one or both houses of Congress flipping to the opposition party, politicians addressed issues in higher education while also obstructing the legislative process in Washington. As expected, one of the key issues addressed by candidates was the persistent problem of student debt. Additionally, there was a growing focus on academic freedom issues, which is linked to the ongoing rise of extremists, protesters, and populists within the Republican Party, who have become a very active and mobilized base.

Student debt remains a persistent and worsening problem, with a total outstanding debt of $1.75 trillion affecting 45 million people, 5 million of whom are in default[3], resulting in an unrecovered debt of $110.5 billion. Furthermore, student debt for individuals over 50 years of age impacts 8.9 million people with a total outstanding debt of $384.5 billion, with an average debt of $43,200. Most of this debt (92%) is public, which eliminates the risk of widespread bank failures due to default. However, it does create significant political pressure on each administration, which may or may not choose to cancel all or part of the debt. During the midterms debate, elected officials requested that the Biden administration forgive $50,000 of debt for all students, a request which was ultimately denied.

Although both the Trump and Biden administrations have passed deferments of repayments for the federal portion of the debt, with full deferment until January 2023, the student debt has increased by $140 billion

[1] With average tuition fees 2 to 3 times lower than universities

[2] They are statistically the first gateway to Higher Education for minorities

[3] https://www.forbes.com/sites/zackfriedman/2022/05/16/student-loan-debt-statistics-in-2022-a-record-17-trillion/

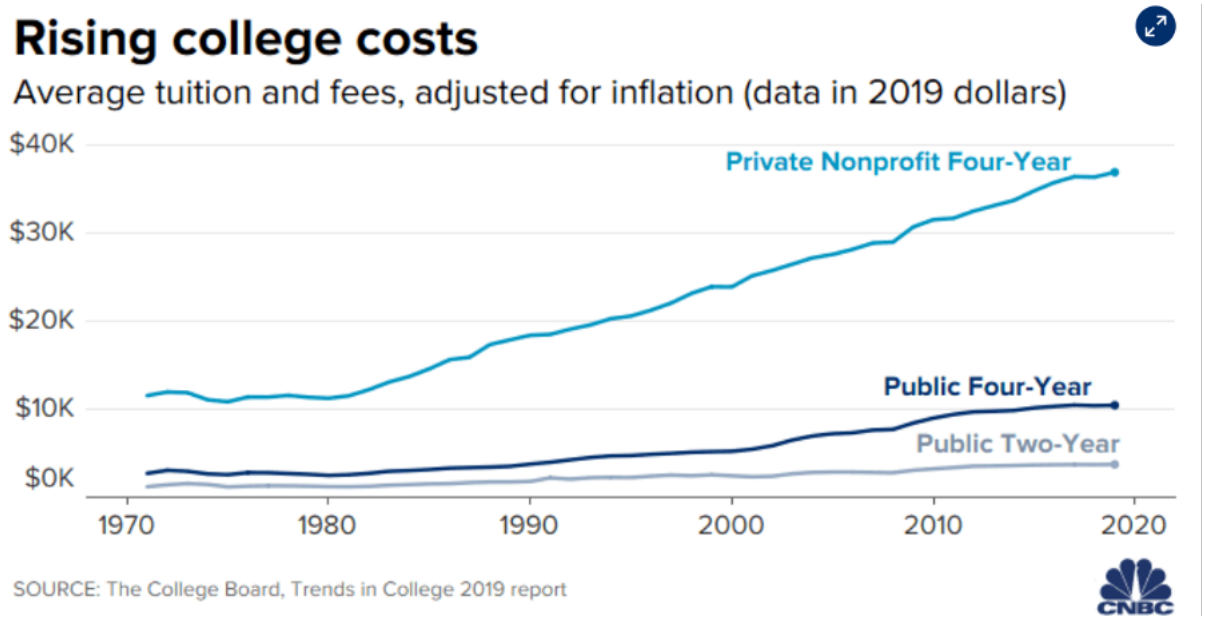
between 2020 and 2022. The Covid crisis and periods of lockdown have negatively impacted the incomes of working students, thereby limiting their ability to repay the debt, while tuition for online and Hybrid courses remained due. This has had a significant impact, as most students (up to 70% in colleges) work outside of their studies[4].

The Biden administration has taken a step towards incentivizing public careers by proposing to forgive or reduce the student debt of those who choose to work in public service[5] or related structures.

The historical differences in approach to higher education between the two political parties have become increasingly accentuated with widening cleavages. Simply put, the Republicans are suspicious of higher education, while the Democrats support it. To illustrate this stark contrast in approach, let us compare the proposals of two candidates for re-election in Florida and New Mexico. In New Mexico, a Democratic state, the governor has proposed free tuition for community colleges, emphasizing education as a public good that serves the community. In contrast, Ron DeSantis[6], the Florida candidate, is a vocal critic of the higher education system, denouncing it as a source of biased political indoctrination. His introduction of the Stop WOKE Act[7] aims to ban the teaching of critical race theories[8], representing a clear challenge to academic freedom.

On the economic front

On the economic front, the higher education market is currently facing a crisis as revenues continue to decline for many institutions. This can be attributed to the combination of increasing supply costs and salaries, which are linked to inflation and full employment, and a historic decline in state subsidies. Additionally, there has been a continued decline in enrollment that is not being offset by significant fee increases.



The experts' predictions regarding the decline in enrolment, which were previously presented in our reports, continue

[4] https://www.usnews.com/education/best-colleges/paying-for-college/articles/weighing-the-pros-and-cons-of-working-while-in-college

[5] https://www.whitehouse.gov/publicserviceloanforgiveness/

[6] Future candidate for the Republican Party nomination

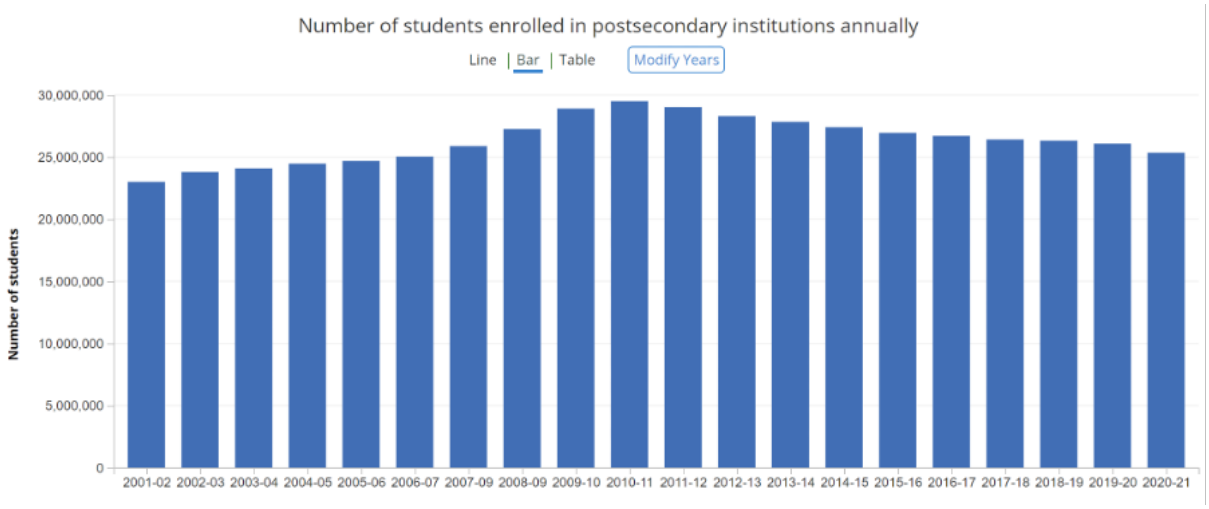
[7] https://actualitte.com/article/103997/droit-justice/floride-une-loi-anti-woke-qui-restreint-la-liberte-d-enseignement (in French)

[8] Or to compel anyone to believe, among other things, "that an individual ... bears personal responsibility and must experience guilt, anguish, or other forms of psychological distress because of past actions committed by other members of the same race, color, sex, or national origin."

to persist due to three main factors:

1. Unfavorable demographics in the United States have led to a reduction in the population of potential new entrants.
2. The cost of education and the resultant debt, along with the difficulties in repayment, have resulted in fewer individuals pursuing higher education and questioning its return on investment.
3. A decrease in international students, which can be attributed to the tightening of rules for working in the United States after graduation under the Trump administration, the availability of alternative offerings in Asia and Europe, and the global health crisis and associated travel restrictions.

This decline[9] in enrolment has affected all types of educational institutions, except for elite ones, and its impact is likely to accumulate over time. Statistical data suggests that female students and the most disadvantaged populations are more severely affected than male students and the wealthiest populations.



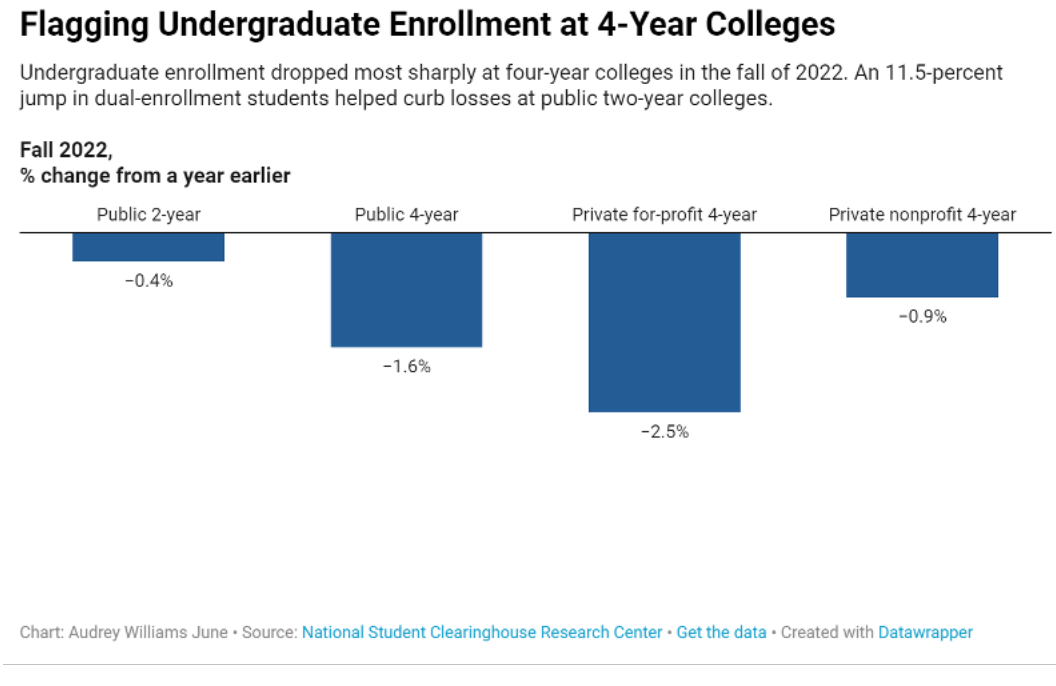
Since reaching its peak in 2010-2011 with 29.5 million students enrolled in higher education, there has been a continuous decline, resulting in a total of 25.3 million students[10] by 2020-2021. This represents a significant loss of revenue for institutions, estimated at approximately $168 billion[11]. However, community colleges have managed to withstand this trend relatively well.

The decline in enrollment is also evident in first-time enrollments, with the number of first-time entrants in fall 2021 (2.8 million students) dropping to the same level as it was in 2002.

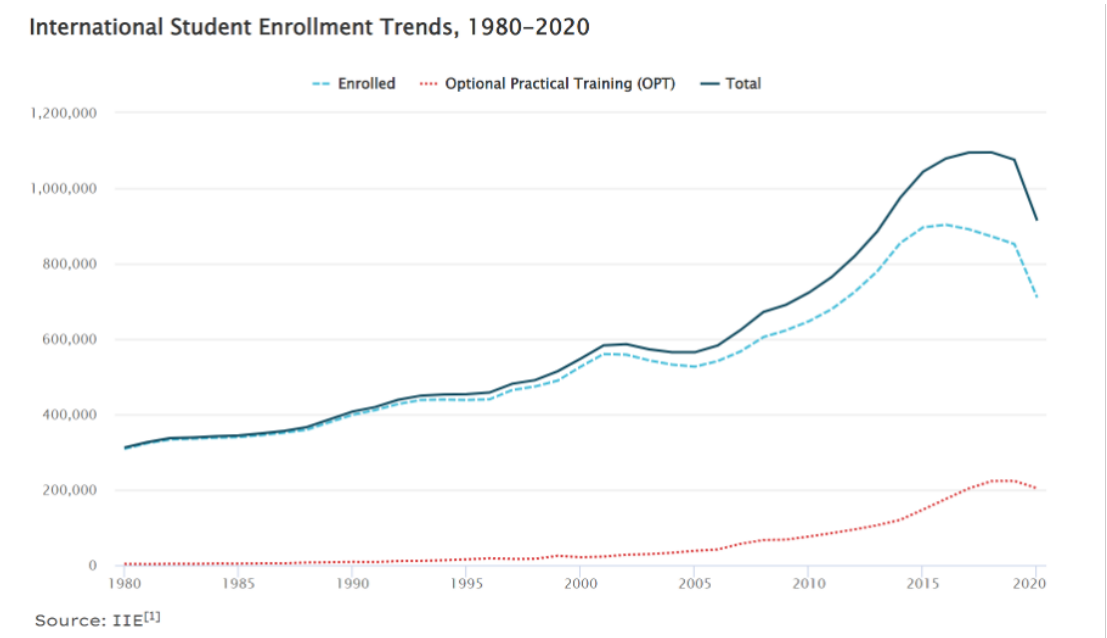
[9] https://www.chronicle.com/article/higher-eds-enrollment-fell-again-this-fall-if-a-bit-more-slowly

[10] https://nces.ed.gov/ipeds/TrendGenerator/app/answer/2/2

[11] Based on an average tuition cost of USD 40,000 https://www.france-esta.fr/cout-universites/ (in French)



In the 2020-21 academic year, international students accounted for only 4.6% of total enrollment, a 15% decline from the previous year. While this drop may be partly attributed to travel restrictions affecting Chinese students, who make up 35% of international students in the US, it is unlikely that enrollment levels will fully recover to those seen in 2018-2019.



The combination of decreased demand and rising costs[12] has created a "scissors effect" that is forcing some institutions to close. Despite the financial assistance provided by the Biden administration's emergency plan[13], the decline in new student enrollment is expected to continue to have a negative impact on higher education. Many institutions are adjusting their recruitment and retention strategies, while others face financial risk and the possibility of consolidation or closure. It is predicted that around 100 closures will occur in the next year or two[14], with most affecting private for-profit colleges.

These closures will leave students without a degree and with few alternatives, potentially adding to the 40 million non-graduates in the US[15]. However, institutions could attract these non-graduates back to the classroom by tailoring their offers to their existing credits and individual needs.

Unfortunately, the tight labor market[16] may pose a challenge to this opportunity. As employers struggle to recruit workers, many are implementing in-house professional training and certification programs, and reducing their reliance on academic degrees. This trend may discourage individuals from pursuing further education or lifelong learning opportunities.

Overall, the decline in international student enrollment and the resulting financial pressures on institutions may have long-lasting effects on higher education. Institutions that can adapt to these changing dynamics and offer innovative solutions for students and non-graduates may be better positioned for success.

On the human resources front

On the human resources front, US institutions, like their French counterparts, have been facing a recruitment crisis for the past five to ten years, which has intensified significantly since the COVID-19 pandemic. Higher education institutions, in particular, are experiencing growing recruitment difficulties due to three opposing and cumulative factors: firstly, the decline in unemployment levels and the high demand for profiles with digital skills; secondly, the "Great Resignation[17]" wave triggered by the end of the pandemic; and thirdly, the increasing pressure on working conditions, including remote work and flexibility. It's worth noting that the US is currently in a state of full employment, with an unemployment rate of 3.5% as of September 2022.

[12] +8% between September 21 and September 22, despite the efforts of the Federal Bank

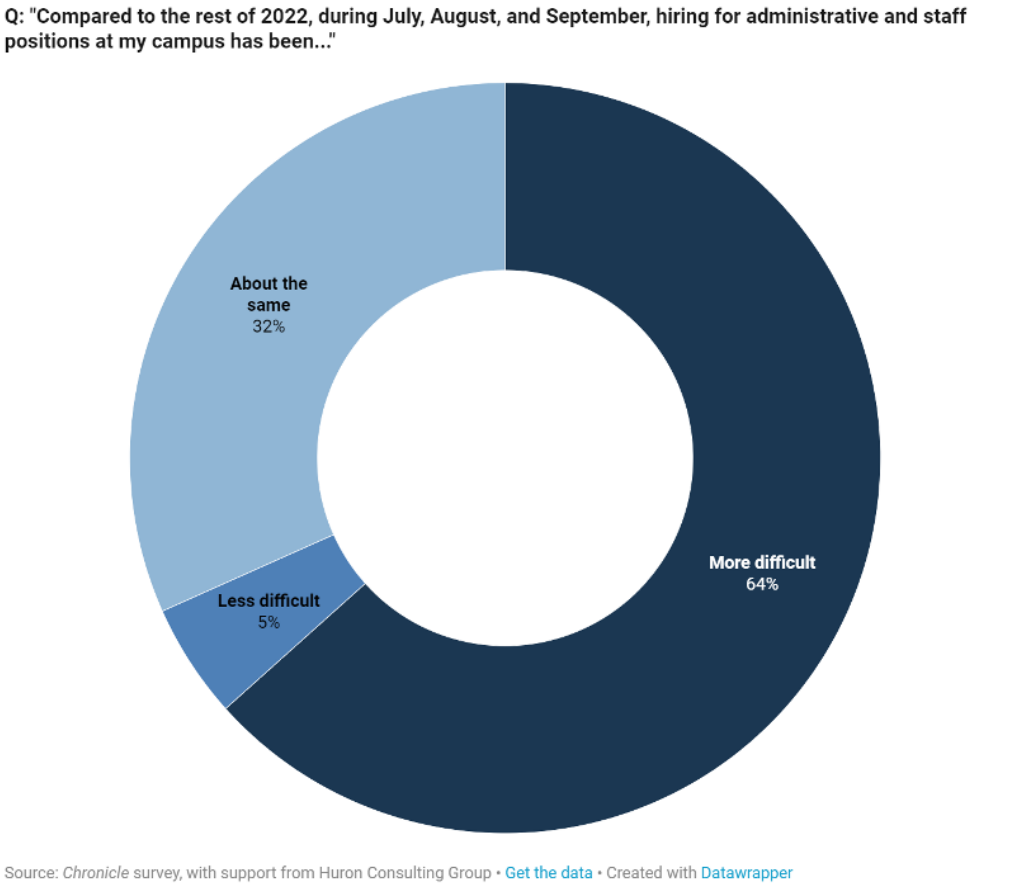
[13] More detail in the 2021 French Delegation report

[14] Hafeez Lakhani, founder and president of Lakhani Coaching in a CNBC article https://www.cnbc.com/2020/05/27/a-growing-number-of-colleges-could-close-for-good-post-pandemic.html

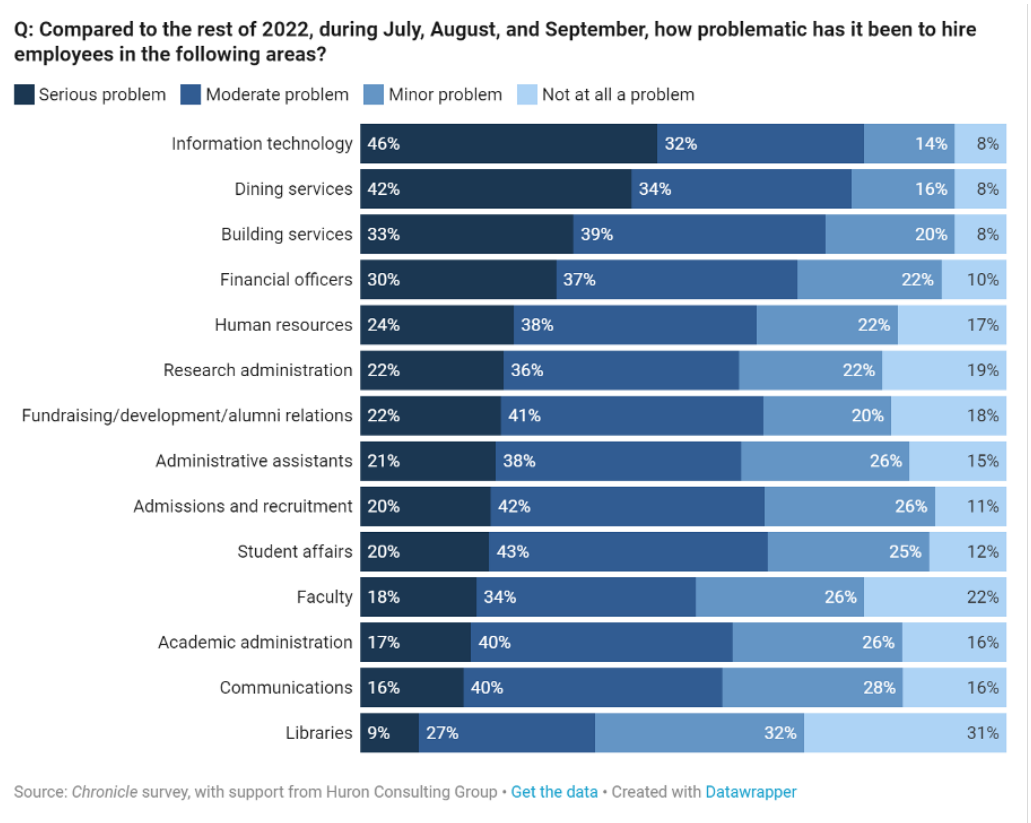
[15] https://nscresearchcenter.org/some-college-no-credential/

[16] With 3.5% unemployment in September 22, the United States is at full employment.

[17] https://en.wikipedia.org/wiki/Great_Resignation



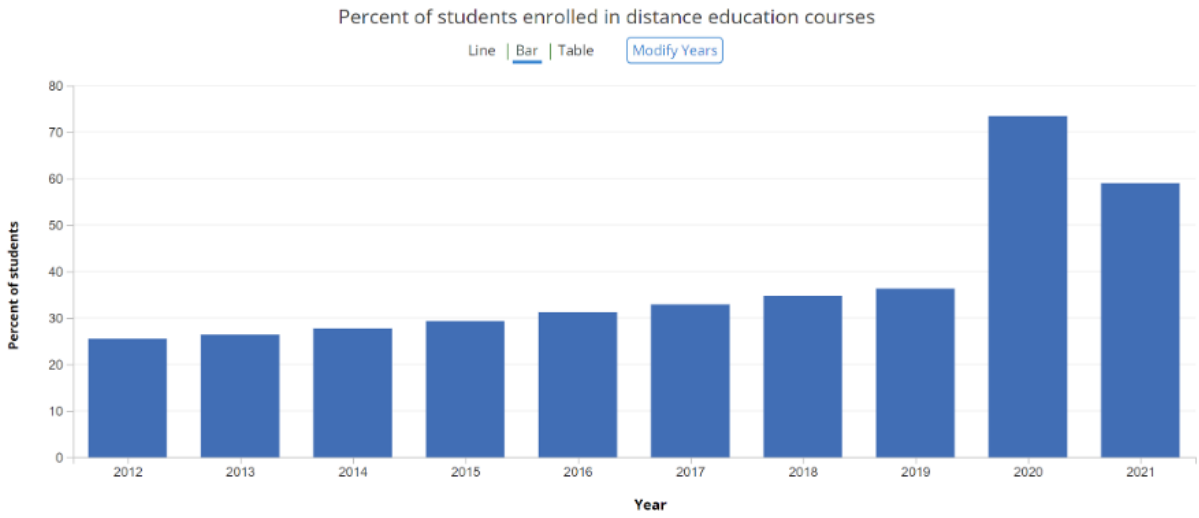
A report by The Chronicle of Higher Education in September 2022 has highlighted the rise in recruitment challenges for higher education institutions, which is even more acute in the IT sector, where 78% of establishments are struggling to attract IT specialists, the most in-demand category, sharing this issue with France higher education ecosystem.



While the COVID crisis and recruitment issues pose constraints, they also present an opportunity for organizations to adopt new ways of working. The culture of change and pragmatism, coupled with the American positive thinking, has resulted in a high degree of flexibility in remote working, compared to the French administration. For instance, the Colorado Community College Network allows remote work from any location in Colorado (equivalent to 50% of France's surface area). The University of Boulder permits up to 100% remote work without any geographical limitations, with face-to-face interactions reserved for socialization and team-building activities. As you will see in the site visits feedback, this is also one of the top 10 IT issues for 2023, and an absolute necessity for leaders to manage differently and develop new skills to embed flexibility into their work organization, as discussed in section *Leadership and Future Workforce*. This should become a prerequisite for attracting, motivating, and retaining talent within teams.

Student success

Student Success, as "the customer is king," was once again at the forefront of the conference and the issues at hand. The COVID crisis marked a significant departure, and a return to the way things were seems unrealistic today. The behaviors and expectations of all the stakeholders in the Higher Education ecosystem have changed. In the words of Dame Wendy Hall[18], "This is not just a health crisis; it is a major shift." Therefore, if one last example was needed to illustrate this significant evolution, not to mention revolution, the demand for online courses, which exploded during the crisis due to lockdowns, has decreased, yet remains twice as high as before the crisis.



Notes: This table presents data collected from Title IV institutions in the United States.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall Enrollment component final data (2012 - 2020) and provisional data (2021).

This has a significant impact on the organization and layout of campuses and learning spaces, given the high demand for hybridization, as well as the need for hyper-flexibility (HyFlex) in learning practices described in sections *Learning Spaces: the turning point of Hybridization*, *Hybrid and HyFlex trend: myth or reality ?* and *The Technician and the Pedagogue: a Teacher's subjective view on the Conference.*

[18] https://fr.wikipedia.org/wiki/Wendy_Hall

Data and its use, which are increasingly based on AI, were also among the topics discussed at the conference, with the goal of making institutions "ultra-intelligent." This objective is recurrent in our reports, but the number of implementations is objectively increasing. Tests and proofs of concept are giving way to large-scale implementations and the industrialization of tools and solutions. The feedback is generally very positive, and the return on investment is high, as seen in section *Enterprise Architecture: to be Student Data Centric or not to be*.

Finally, this introduction to the higher education context would not be complete without highlighting an important cultural element raised by the Delegation - the impact of the death of George Floyd and the Black Lives Matter movement. It was mentioned in all our exchanges with US colleagues. Compared to our pre-COVID exchanges where DEI issues were objectively increasing, the death of Mr. Floyd seems to have been a shock and marks a significant turning point, at least in the Higher Ed ecosystem, leading to a stronger consideration of these issues, at least in those states that do not limit academic freedom.

On behalf of the French Delegation to EDUCAUSE, we hope you enjoy reading.

Top-10 IT Issues

Laurent Flory & Julien Dupré

Annually, the EDUCAUSE IT Issues Panel selects 15-20 topics that they believe will be the most significant IT-related issues facing higher education institutions. EDUCAUSE members receive a survey containing these issues and are asked to prioritize them. The 10 issues with the highest priority scores become the Top 10 IT Issues. These top 10 IT issues were presented for the second time in conference history during a plenary session, reaffirming their importance to the EDUCAUSE community.

It is noteworthy that the issues for 2023 closely resemble those of the Top 10 IT Issues for 2016[19], albeit not in the same order.

All content related to the top 10 IT issues can be found on the EDUCAUSE website[20]. The report itself can be accessed directly[21]. Since the original content is in English, no further presentation will be provided in this English version for the French Delegation.

[19] https://er.EDUCAUSE.edu/articles/2016/1/top-10-it-issues-2016

[20] https://www.EDUCAUSE.edu/research-and-publications/research/top-10-it-issues-technologies-and-trends/2023

[21] https://er.EDUCAUSE.edu/articles/2022/10/top-10-it-issues-2023-foundation-models

Site Visits

Frédéric Habert

Introduction

Covid-19 has had a significant impact on higher education in the United States. In response to the pandemic, many universities and colleges had to close their doors and switch to online learning. This has had a significant impact on students, faculty and staff, as well as on the finances of higher education institutions.

Here are some of the most significant changes that have occurred in U.S. higher education in response to Covid-19:

- Switch to online learning: In order to prevent the spread of the virus, many colleges and universities closed their doors and began offering courses online. This required a quick adaptation from both teachers and students, who had to learn how to use new technologies to take courses remotely.
- Financial challenges: The switch to online learning has resulted in a decrease in revenue for many colleges and universities, which have had to cut their budgets and lay off staff. Many students have also struggled to pay their tuition fees due to the economic crisis caused by Covid-19.
- Mental health issues: social isolation and uncertainty related to the pandemic led to an increase in mental health issues among students and university staff. Many higher education institutions have had to put in place support programs to help those affected by these issues.

In general, Covid-19 has brought many challenges to higher education in the United States, and higher education institutions have been forced to adapt quickly to continue to provide a quality education to their students. Today they have entered a phase of capitalizing on the systems and practices put in place during the pandemic.

Regarding the state of Colorado, it has a diverse higher education system, including public research universities, private colleges and universities, and community colleges. The following is a summary overview of higher education options in Colorado:

1. Public Research Universities: Colorado has two public research universities, the University of Colorado (UC) and Colorado State University (CSU). These universities offer a wide range of undergraduate and graduate programs and are recognized for their research programs.
2. Private Colleges and Universities: Colorado has several private colleges and universities, such as the University of Denver, Colorado College, and Regis University. These institutions offer a wide variety of undergraduate and graduate programs and have smaller enrollments than the larger public research universities.
3. Community Colleges: Colorado also has several community colleges that offer degrees at different levels. Community colleges are generally less expensive than universities and are a good option for students who want to complete their general education before continuing on to a traditional university.

Overall, Colorado has a diverse higher education system that offers students a variety of options to pursue their educational and career goals.

University of Colorado Boulder

University of Colorado Boulder (UC Boulder) is a public research university located in Boulder, Colorado (30 miles from Denver). It was founded in 1876 and is the flagship university of the University of Colorado system.

UC Boulder has over 36,000 undergraduate and graduate students, including 2,400 international students. It has an 87% employability rate within 6 months and a median mid-career salary of $111,000. The university offers more than 150 undergraduate and graduate programs across the following components:

- College of Arts and Sciences
- Leeds School of Business
- School of Education
- College of Engineering and Applied Sciences
- School of Environmental Design
- School of Law
- Graduate School
- School of Music
- School of Journalism and Mass Communication

UC Boulder is known for its programs in engineering, business and the humanities. It is also home to the Cooperative Institute for Research in Environmental Sciences (CIRES), a joint institute between UC Boulder and the National Oceanic and Atmospheric Administration (NOAA). UC Boulder is also home to numerous research centers and institutes, including the Institute for Arctic and Alpine Research (INSTAAR) and the Laboratory for Atmospheric and Space Physics (LASP).

UC Boulder is a leading public university that offers a wide range of academic programs, has had 5 Nobel Prize winners, and also has the distinction of having been the university of 18 astronauts. Leading research exists in space research and cloud computing.

In addition, the university focuses on the user experience of students by promoting well-being and success.

In this respect, the IT department has completely redeveloped the student portal (formerly on Peoplesoft and Oracle) in collaboration with the students (functionalities and development). Since then, the evaluations are good (88% satisfied) and there has been a 13% increase in the number of visits. This project was motivated by the desire to offer a pleasant experience in relation to the financial investment that represents the costs of higher education, and also to cut short a legal procedure on the issue of accessibility.

In this context a continuous effort is made to evaluate and evolve the portal and services.

In the same vein, the pandemic has confirmed the need to react more quickly, including in the area of student success. This led to the establishment of the Buff Undergraduate Success Leadership Implementation Team (BUS-LIT) whose mission is to determine a method for evaluating the effectiveness of current and future programs and to inform management. The BUS-LIT acts in tandem with cross-functional workgroups charged with inventorying and analyzing student success programs on campus, recommending priorities for implementation, and managing these actions to completion. This work has included streamlining the student process (course registration, funding, one-stop shop, etc.) and generally identifying what is inefficient and time-consuming.

The pandemic has also led to changes in teaching practices with a 12-person Center for Teaching and Learning to develop communities of practice. They provided support and guidance for the diversification of teaching methods, particularly during the pandemic. The pandemic saw the development of distance learning courses with Zoom and a particular effort was made to accompany teachers in learning educational technologies. A CRM (support center) and training courses (particularly for Canvas, the teaching platform) are available.

Today 94% of the courses are face-to-face (as before the pandemic). This is also the percentage of courses that are available on Canvas. The teachers feel more concerned by the participation of the students and new techniques of animation appear in the courses or on Canvas (podcast, i-clicker...). 400 classrooms have been summarily equipped for co-modality (face-to-face + distance learning) and 15 have been designed and equipped in a more sophisticated way. However, teachers are sometimes reluctant to use them. Overall, there are more initiatives at the Master's level, particularly with an online offer. Finally, new technologies are slowly arriving, such as augmented reality.

Regarding data governance, they try to find a balance between relevant use and security, notably by disconnecting them from users when possible. They have developed the use of firewalls because, with the pandemic, connections from outside the company have increased significantly.

In addition, the issue of teleworking (still not very developed) is being raised. They are also concerned by the phenomenon of "the big resignation" with the departure of IT skills to companies. A response to this is the development of support services around well-being and inclusion to reinforce the attractiveness of the campus.

The issue of equity is also given a great deal of attention. A vice president in charge of diversity, equity and inclusion is working on a global approach with a team of 10 people. The goal is to reduce all barriers (physical and cultural) to access the university.

Colorado Community College System IT

Le **Colorado Community College System (CCCS)** is the public community college system in the state of Colorado. It was established in 1967 and is governed by the Colorado Department of Higher Education.

CCCS enrolls more than 131,000 students each year and offers a wide range of academic programs, including general degrees and 2-year professional development courses. It is comprised of 13 community colleges located throughout the state, each accredited by the Higher Learning Commission.

Here are some of the key features of CCCS:

- Affordable Tuition: CCCS offers the most affordable tuition ($6,000-$12,000/year) in the state, making higher education accessible to more students.
- Flexible scheduling: CCCS offers daytime, evening, and online classes to fit students' schedules.
- Transferability: Many CCCS programs are designed to transfer seamlessly to universities, allowing students to continue their education after graduation.
- Strong partnerships: CCCS has partnerships with local businesses, organizations and institutions, which provide students with real-world experiences and career opportunities.

The goal of the Colorado Community College System is to provide a quality, affordable education to students in the state of Colorado.

Within this organization, the CCCS Information Technologies department (66 employees) offers mutualized services in the field of information systems. The principle is to provide a better and cheaper service through mutualization. Exchanges take place with the establishments during the steering committees at the operational and long term level, and they have a monthly meeting with the local CIOs. Strategic projects include :

- Asynchronous teaching available in all colleges, with ready-to-use course structures (on the D2L platform)
- Ensuring the long-term sustainability of rural colleges through resource and course sharing, including distance learning
- Consolidate mail by aggregating the 15 Microsoft 365 into one
- IS urbanization

The services offered also concern the human resources and schooling IS, as well as a network (leased from an operator) of 10,000 km of fiber optics. They provide Webex for meetings and telephone. Even though they have not had any serious alerts in the area of cybersecurity, they will simulate different types of attacks to test their defense. During the pandemic, Wi-Fi was available in the parking lot for students to connect.

Because of the pandemic, some students stopped their studies to go back to work, especially among the poor, and they have not yet returned. Finally, the demographic evolution implies a natural decrease of students (elementary school are closing) which they try to compensate by offering continuing education.

Community College of Denver

Community College of Denver (CCD) is a public college located in Denver, Colorado. It is part of the Colorado Community College System and serves the Denver metropolitan area.

CCD offers a wide range of degree and certificate programs in areas such as business, health, technology, and the arts. It offers mainly short-term vocational training and some other training that allows students to continue their studies at the university. The college has four main campuses: Auraria Campus, Lowry Campus, Stapleton Campus and West Campus. CCD also has several branch locations and offers online courses for students who prefer to study remotely.

In addition to its academic programs, CCD offers a number of services and resources for students, including tutoring, career counseling, and financial aid assistance. The college also has many clubs and organizations for students to join, as well as athletic teams and recreational activities.

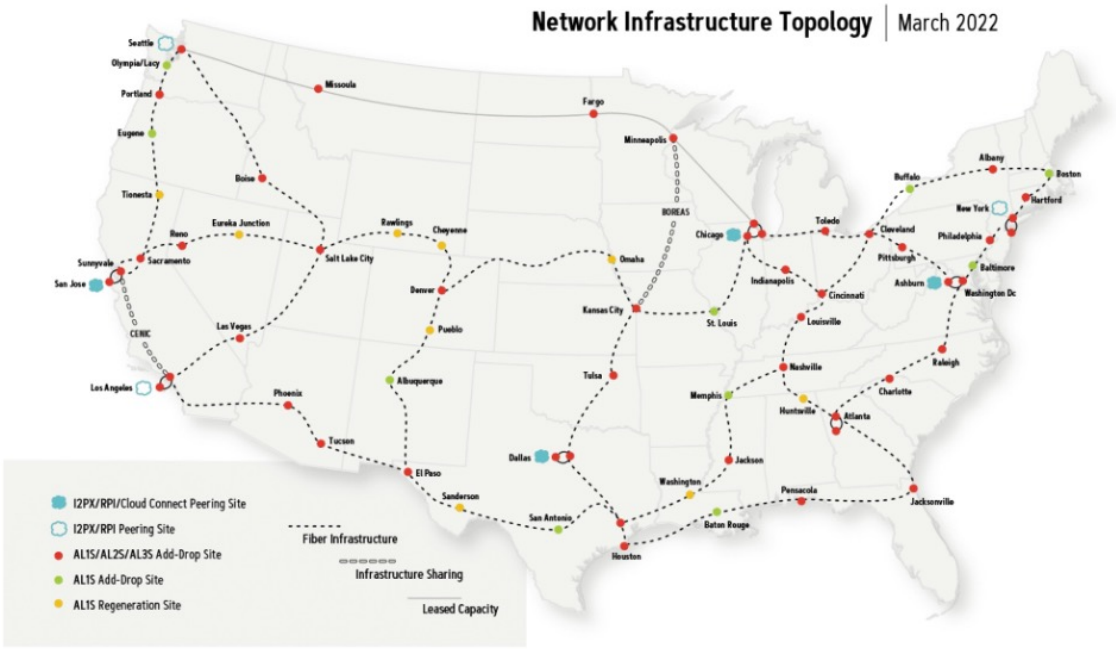
The majority of students are on a two-year pathway and come from families with no formal education. Half continue their studies at university. The other half are in vocational studies with two levels of qualification (certification or diploma). Sometimes university students come to the DCC to get a professional qualification. The CCD has 9000 full-time students.

The IT team has 10 people and works with the audiovisual team.

During the pandemic, teachers had to find ways to stay interactive with students with Webex (now Zoom and Teams) and the D2L educational platform. The Teaching and Learning Center is responsible for supporting the use of these tools, with 24 people including 2 instructional designers. Current projects include the development of HyFlex rooms, the provision of laptops, migration to the cloud and better management of wifi.

The students live in the Denver metropolitan area, but they appreciate the hybrid nature of the courses, which means they don't have to come to the campus and avoid traffic and parking problems. Their numbers dropped during the pandemic but are starting to pick up.

Internet2



Internet2 is a research and education consortium focused on advanced network technologies in the United States. It was founded in 1996 by a group (489 members) of universities, industries (Instructure, Google...) and government agencies (Federal Institute of Health, research institutes...). Internet2 serves as a test bed for developing and deploying network technologies, such as high-speed data transfer, grid computing (distributed virtual infrastructure) and virtual reality applications. The 110 employees (who can telework) are based in Denver, Washington DC and Michigan.

Internet2 operates its own high-speed network, called the Internet2 Network, which connects member organizations across the country. The network has a capacity of up to 100 Gbps and uses advanced technologies, such as Software Defined Networking and fiber optic networks.

One of Internet2's primary goals is to support the research and education community by providing access to high-performance network technologies and resources. They achieve this through several programs and initiatives, including:

- The Internet2 Innovation Platform: this is a set of tools and resources that enable researchers and educators to test and deploy new applications and technologies on the Internet2 network.
- Internet2's NET+ Program: this program provides member organizations with access to cloud computing resources and services from leading providers, such as Amazon Web Services and Microsoft Azure with the benefit of negotiated pricing.
- Internet2 Trust and Identity Program: this program provides member organizations with tools and resources to manage and secure user identities and access to online resources.

Universities can connect directly to this network, but it is also possible under certain conditions for non-members to benefit from the services. For higher education members, the annual contribution varies from $12,000 to $102,000.

Collaborations exist with Renater and Géant, and they participate in Eduroam with Edugain.

Enterprise Architecture: to be student data centric or not to be ?

Sylvie Haouy

Introduction

Enterprise architects can testify: this 2022 edition of EDUCAUSE confirms a major focus on data to the detriment of tools and solutions. Data seems to be the foundation of the "ultra-intelligent institution", one of the 3 themes of the plenary conference "Top 10 IT topics for 2023".
Several institutions are sharing their approach to implementing or evolving their data governance. A working group meets every month on data governance within the framework of EDUCAUSE[22] and the ITANA[23] group group is also working on this topic.

Clearly, data-intensive business intelligence is booming, might it be for pedagogy and student success or for the strategic and commercial development of institutions.
At the same time, several conferences testified the interest of student-centric institutional strategies and student-centric information systems. This solid trend was as well validated by the visits made during the study tour. This approach seems to become the backbone of enterprise architecture, and allows many organizational problems to be solved, as we shall see.
Finally, some conferences mix the two themes and propose new ideas for a student-data-centric information systems.

[22] https://www.EDUCAUSE.edu/community/data-governance-community-group

[23] https://spaces.at.internet2.edu/display/itana/Home

On Data Gouvernance

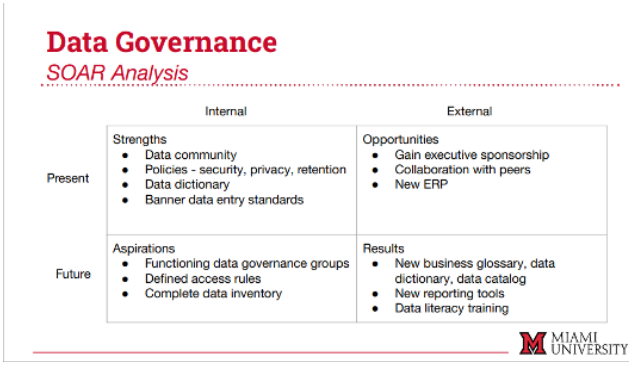
A consistent and well identified perimeter

Building a solid foundation of quality, compliant and available data, is a prerequisite for digital transformation and business intelligence. The data management and governance modeled by the DADM Wheel seem to be a target widely shared by stakeholders to :

- Enable an organization to manage data as an asset
- Define, approve, communicate and implement principles, policies, procedures, metrics and responsibilities for data management
- Monitor and guide compliance, usage and data management activities, and the data quality required for all old and new services, especially BI.

The first step in this process, given this immense scope, is to define a specific path for and by each institution according to its strategy, context and strengths. This is the role of the data managers, CIOs and even BI managers who met at the Data Governance Community Group meeting, which brought together some 30 people at EDUCAUSE.

Miami University after presenting an analysis of its strengths and assets (SOAR) in relation to data management, presents its roadmap and status :



The project sponsor and the data leadership must come from the top of the organization, much higher than IT. The concern around data must really go beyond IT to reach its full dimension. IT implements the decisions and practices decided by the Data Governance Council, which is made up of institutional representatives from education and research, legal experts, information security officers and representatives from the departments that produce the data.

University of California Riverside discusses ongoing experiments with Google's solution including Google Big Query (full cloud data warehouse), Looker (cloud-based business intelligence platform) and Google Data Catalog (cloud-based metadata management service).

Georgia Institute of Technology is a very collaborative institution. There are already application managers, coordinators between disciplines... Having data stewards in each structure (business unit), real relays for data governance is very useful, it then becomes participatory. Moving forward in a domain is much easier than working between finance and HR for example. The creation of data domains and sub-domains with a distributed data access model is a necessity.

With the pandemic, it has been demonstrated that technology only works if it is "seamless" between campus systems and the central IS, the present institutions acknowledge the importance of bringing all the data from the components or campuses back to the central system on the one hand so that they are more secure and accessible and on the other hand to be able to exploit them in decision intelligence (Learning analytics...).

Arizona State University is rethinking its institutional data governance policy with regard to privacy and presents the broad outlines in the conference entitled "Re envisioning Data privacy at Arizona State University". More information is also available on their website[24]. The presentation is given by a close-knit team including the privacy manager, deputy CEO, DGS... all with the same enthusiasm. The general principles are transparency "You can see your data and why we need them" and simplicity "make data simple". An entire organization of data stewards promotes the proper use of data in each functional area and a supervisory body, the "Data Oversight Council", has been set up to define and monitor the institution's data strategy. The main tools are the Master Data Management (MDM) software and the data warehouse. The philosophy is to work and decide on the strategy together with all the campuses and components and not only centrally. The presentations made by the institution demonstrate the need to assess data maturity level in relation to each subject in order to take decisions and move forward (cf. Data Management Maturity Level[25] or Gartner Model[26])

When compared to French universities these approaches allow projects and tools to be implemented much more quickly than in our institutions. Instead of investing much on modeling and conceptualization as essential prerequisites, the search for quick wins is systematic.

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A focus on two major axes: Privacy et CyberSecurity

Privacy and cyber security are perceived as key to data governance. As the USA are working on the elaboration of a federal law on data protection privacy could look like the most important topic. But the move to the cloud for all types of strategic data, whether sensitive or not for economic and availability purpose leads to the rapid development and concern for Cybersecurity : "Data is very cloudly".

Concerning Privacy, currently, some American states have put in place data protection laws, which are generally less demanding than the GDPR. Three of them are applicable for Education and serve more or less as a reference (California, New Jersey ...). In the article and conference entitled "Legal Update: What You Need to Know to Comply with International Data Privacy Laws", we see that operating without federal law is complex and that the extra territoriality of international laws is a major concern.

China's Personal Information Protection Law (PIPL) is of great concern to universities and their legal departments given the number of Chinese applicants and students at U.S. institutions. The PIPL applies to all Chinese data abroad with an ultimate goal of protecting the state rather than the individual. It is even more difficult to comply with PIPL than it is with the GDPR, but the spirit of it is already more enforced in the US now. This law dates back to 2021, so there hasn't been any enforcement yet but institutions should be prepared to pay hefty fines. The general advice to institutions is to make sure that Chinese students sign the consent form

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[24] https://tech.asu.edu/security-policies/data-governance

[25] https://tech.asu.edu/sites/default/files/enterprise_data_management_maturity_assessment.pdf

[26] https://www.gartner.com/smarterwithgartner/7-key-foundations-for-modern-data-and-analytics-governance

indicating all the uses of their private data. France is less concerned by PIPL because there are less Chinese students and especially there are no Chinese IT services used the same way we heavily rely on Microsoft or Google in French institutions.

The general approach to sanctions is also much more pragmatic and quantified than in France. Privacy is completely integrated in the risk management of an establishment.

The new American law in the making will provide a framework for this; it has been announced for 2023, but without any certainty. The principle will be "privacy by design", which is highly expected by foreign countries such as France for all data transfers in online services offered by GAFA for example, but also by the Americans themselves. Privacy by design greatly simplifies compliance and helps to keep data simple.

There are so many sector-specific applicable regulations that it is difficult to be 100% compliant. And you shouldn't have to be a legal expert to design data for users. Thus, the idea is to simplify processes and follow a "trust base" that is always a little bit more protective for users than the compliance base.

An EDUCAUSE 2022 conference entitled "Picking the Right Ed-Tech Tool: A Data-Privacy Review and Pedagogical Perspective" offers an analysis of market solutions based on privacy criteria, and a poster entitled "Ethical Use of Student Data in Predictive Analytics and Interventions" advocates an ethical use of student data, measured and justified, in order to ensure that it is used exclusively for the benefit of students.

More and more data for Business Intelligence

So as to evolve information systems while allowing creative designs, we today require all kinds of university data covering student professional domains at the university but covering as well the whole of their career. Several examples of conferences or posters at EDUCAUSE deal with new uses of data to ensure student equity, student's progress and success with learning analytics, targeting/screening of potential students... Joining data from several information systems is very powerful especially to reinforce student engagement and enhance their experience.

We also talk about the democratization of data, which consists in authorizing the consumption of reliable data by internal actors of the institution to help them make decisions, as shown in the poster "Data Democratization at Speed enables a multitude of successful outcomes in higher Education". But beware, the IS does not necessarily have all the data it needs today thus on the field data collection and organizational knowledge remains useful in some circumstances.

The dynamic of Student Centricity

Campuses that choose to implement "student centric" digital services ensure a complete student journey - from applicant to alumni - and guarantee success, student reliability and also increased enrollment.

This is a real trend discovered during the study visit to Boulder Colorado University with the presentation of their student portal, designed with and for students. It is confirmed by several EDUCAUSE presentations.

Several testimonies present the "student centric" strategy as extremely interesting for the student but also for the institution. Just as "siloed" as in French institutions, the business services and the different faculties, usually exclusively focused on their own data and processes, change their point of view and start collaborating more easily from this common denominator.

Conclusion

Engaging university stakeholders to work with student centricity in mind can help at alleviating the data concern from IT services shoulders and bring around the table all the players and break the silos. This is a promising avenue so that enterprise architecture is a factor of unity that breaks the usual compartments.

Two improvement tracks have been identified: first, we should break data silos and reorganize data, starting from the students and working with the students in what we call "student data centric" mode. Then we should centralize all university data to improve its sharing and reuse.

The technical and functional decompartmentalization of data is much simpler in the United States because, unlike in France, American information systems are essentially based on a collaboration of three systems: the "ERP-LMS-CRM" trilogy (Enterprise Resource Planning - Learning Management System - Customer Relationship Management).

Education-specific ERPs allow data of different kinds to be shared natively within the same database. The problem of reference data is simplified and native (e.g. Salesforce for Education). The level of concern regarding the integration and sharing of data is more advanced than that of French institutions already busy with the basic level of integration via Master Data Management systems. Organizing the data from the three tools into a model with new student centric domains and sub-domains is key.

The difficulty in the United States is rather political and administrative to retrieve all the decentralized data in the faculties and campuses and stored in other ERP, CRM or LMS systems than the central system. You have to convince people by putting forward arguments such as easier access to secure data with, for example, the implementation of more secure data warehouses in the cloud ....

As heard in the long corridors of the Denver Conference Center "*Proposal of data Governance is hard but fun*".

Back to School for employees

Pascal Vuylsteker

The Post-Covid era

Over the years, the French Delegation to EDUCAUSE has developed its network, which now extends beyond the sphere of Higher Education (contacts change jobs). Upon landing in Denver, we had the opportunity to reconnect with a former Colorado School of Mines employee who now works for the state of Colorado as the head of a team of about twenty level 3 helpdesk technicians (those whom level 2 calls when they are unable to resolve level 1 issues). A full team that works almost exclusively remotely. This was the first clue. And this testimony was confirmed during our visits and numerous interventions during the conference, with two complementary points of view.

On the one hand, forced remote work due to lockdowns went relatively well for IT teams. In fact, employees have come to appreciate not wasting time commuting and spending more time with their "loved ones."

On the other hand, the possibility of teleworking in Hybrid or Full Remote mode is part of the arguments in favour of employment, whether during recruitment or in encouraging job retention. This aspect is noteworthy in the context of the "Great Resignation," a phenomenon that first appeared in the Post-Covid period in the USA.

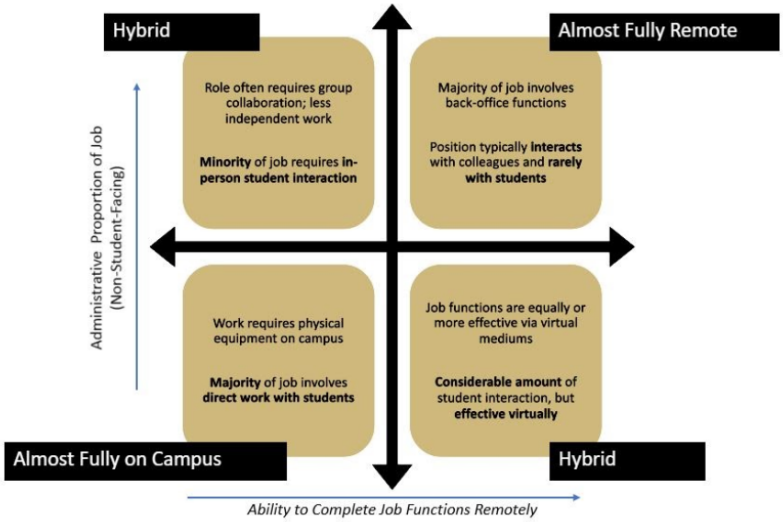
It is worth noting in passing this expression "Post-Covid," which also reflects the mindset observed throughout the conference: the "Covid" situation is now perceived as behind us.

Hybrid and Remote work within the visited institutions

For more details on the subject, here is the situation in the visited establishments.

At **CU Boulder**, all arrangements are possible. The guiding principle is negotiation, department by department, unit by unit, in the search for the optimal work environment, based on the job and related tasks, following the guidelines of the campus[27].

There are no systematic rules, but rather a willingness to negotiate and adapt. Thus, if some jobs are easily adaptable to Remote Work, others, such as those of campus security teams, may not present the same opportunity. In this case, managers are encouraged to rethink work organisation, for example, by concentrating all of an employee's administrative tasks on one day of the week to allow them to telework at least that day. And of course, remote work is just an option, never an obligation.



Educational Advisory Board. 2021. Strategies to Support Remote Operations Now and Post-Pandemic

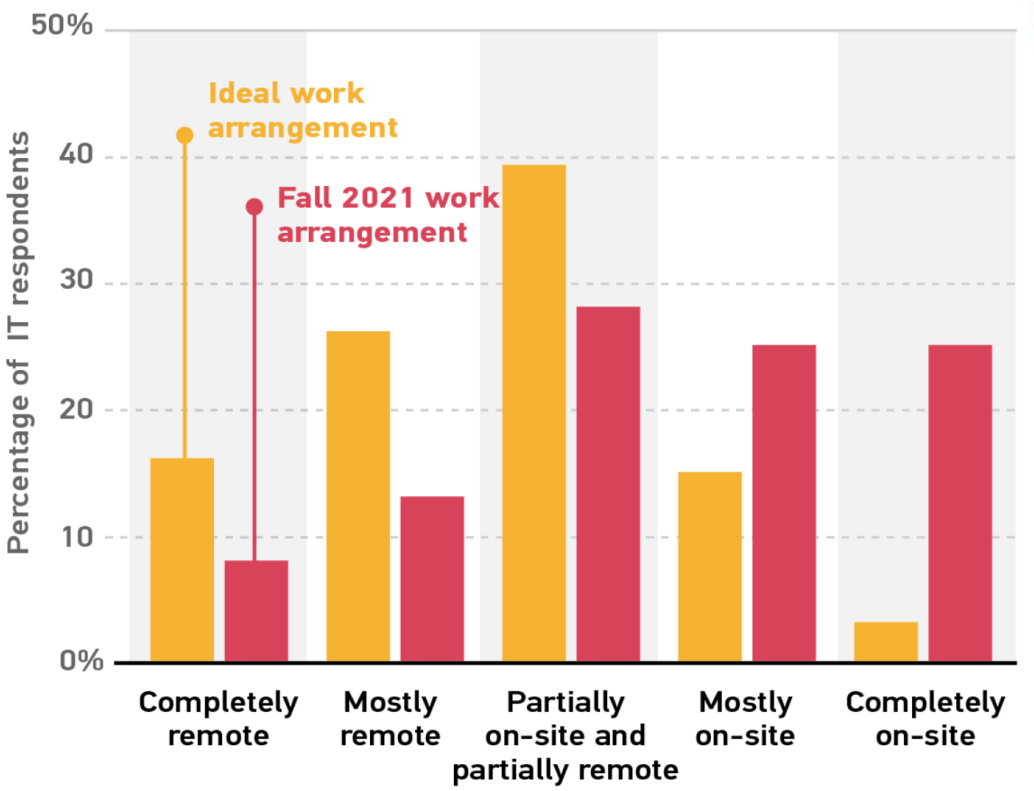
[27] CU Boulder Remote Working Toolkit : https://www.colorado.edu/hr/cu-boulder-remote-working-toolkit

At **CCCST** - Colorado Community College System, within the IT teams (66 people), you can work from anywhere in the state of Colorado. Employees perceive that the efficiency of the teams has not suffered and has even improved. The possibility of remote work, as in other testimonies, is presented as a competitive advantage in favour of recruitment. Like French universities, it is important to be able to offer specific advantages in order to respond to salary competition from the private sector.

EDUCAUSE session: Management of employees working remotely or in a Hybrid mode

On the conference side, there was often talk about post-COVID remote work. The subject is viewed through the prism of the need to offer a better work-life balance to employees tempted to leave their positions (points 3 and 5 of the famous EDUCAUSE Top 10).

One of the most interesting presentations on the topic was « From Surviving to Thriving: the 4Cs of a Highly Effective Hybrid and Remote Workforce »[28] with presentations from numerous surveys.



[28] *From Surviving to Thriving: the 4Cs of a Highly Effective Hybrid and Remote Workforce* : https://files.abstractsonline.com/CTRL/FE/B/A88/472/D97/47D/C81/F58/8A6/A6F/6D5/C9/a3326_1.pdf

Firstly, the observation that IT employees in higher education consider, in a vast majority, that the ideal configuration for organising their work is a partially hybrid organisation, even mainly working remotely for some. The impossibility of remote work is well identified as a possible trigger for resignations (for 31% of those surveyed).

One of the speakers shared his experience on the subject of a recent hire, at their university, of a hard-to-find Cybersecurity specialist, who was poached at the expense of the original employer who did not want to offer remote work to his employee. Among the institutions present, Notre Dame had a standard position: 2 days of remote work allowed by default for compatible jobs and the possibility to go further (up to full remote) through negotiation.

In conclusion, it is interesting to note that the market is structured similarly in France. At SFR, Microsoft, HEC, Parrot, etc., the two (sometimes three) days of remote work are automatically granted.

At Capgemini, employees are only required to be on campus for a minimum of 4 days per month. It should be noted that most employees still go to the office more often, but because the offices are welcoming. The focus now is on offering choice to employees.

Leadership and Future Workforce

Emmanuelle Vivier

Positioning the topic in the Top-10 IT Issues

The first of the three topic included in the 2022 Top-10 IT Issues is entitled *Leading with Wisdom* and is divided into three sub-topics listed below, preceded by their respective ranking.

1. A seat at the table

Ensure IT leadership is a full partner in institutional strategic planning

3. Evolve, adapt, or lose talents

Create a workplace that allows and supports movement up, down, and sideways to accommodate shifts in personal and professional goals and to foster healthier work/life balance

5. Enrich the Leadership Playbook

Leading with humility and honnesty to engage, empower and retain IT workforce

It must be noted that the theme 'Leadership and future workforce' is therefore fully in line with these topical subjects in the United States, subjects which, moreover, can easily be transposed in France into higher education and research institutions. We have similar problems in our institutions. The growth of digital usage, especially since the health crisis, forces us to do more and better, often with less.

Context Elements

After much needed adaptation to address the global health crisis, which has already taken up considerable time and resources, US institutions of higher education now face a variety of challenges.

First, a significant and continuous decline in student numbers over the past several years has resulted in a mechanical decrease in the resources of the institution and consequently a decrease in IT budgets.

The surge in cyber attacks requires additional budgets to organize heightened vigilance and continuous training of IT teams.

Finally, rising IT costs around the world are driving up the digital budget.

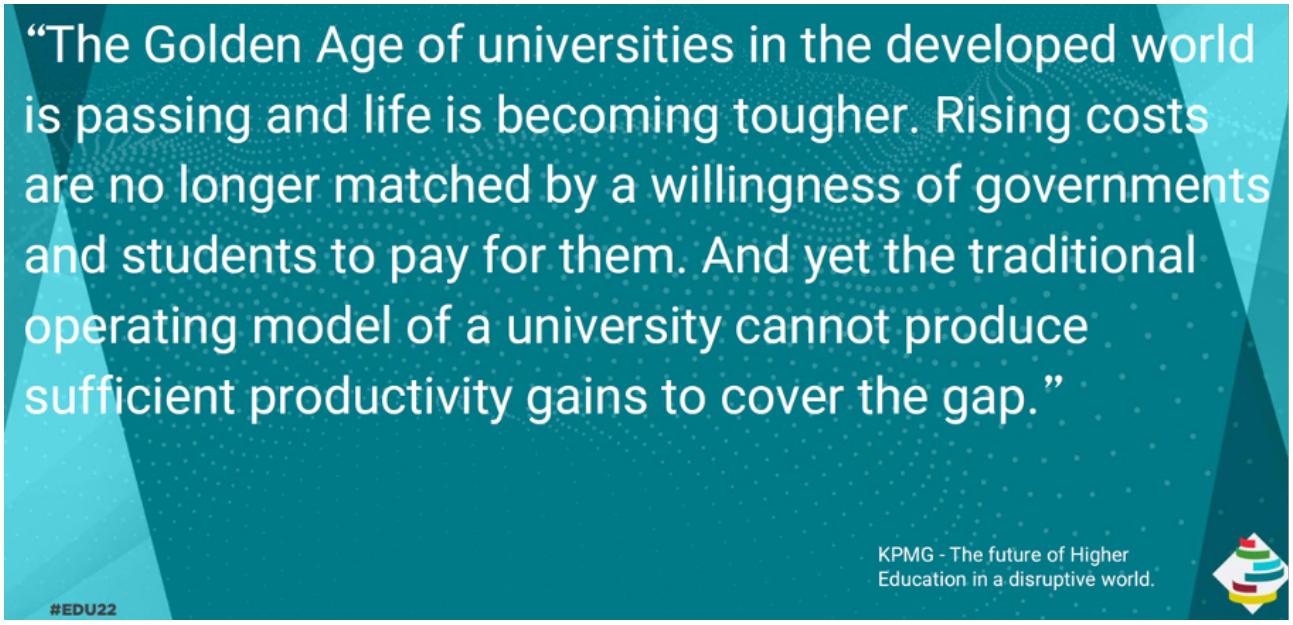
This means optimizing the IT management, inventing solutions and bringing teams together while preserving them. The quality of management becomes an essential element in the service of an overall strategy of institution. IT projects are often vital issues and must be conducted with rigor and perseverance by the CIO and his teams.

In terms of human resources management, the context is not favorable either, with turnover of IT teams varying from 25 à 40 %[29] !

[29] *Attracting, Developing and retaining top talent :* Sasi Pillay, VP and CIO of University of Washington, Scott Willett : Executive director of University of Texas

Quality of working life, well-being, a sense of freedom in the organization of work, work-life balance become very important criteria in the recruitment, career development and retention of staff. Salary remains important, of course, but is no longer the only element considered.

Management needs to be revisited in the light of the generalization of remote work and the manager must show imagination and goodwill to maintain the motivation and cohesion of the teams (ensuring a distancing/presential balance, being attentive, reconstituting communities, redesigning workspaces, etc.)[30].



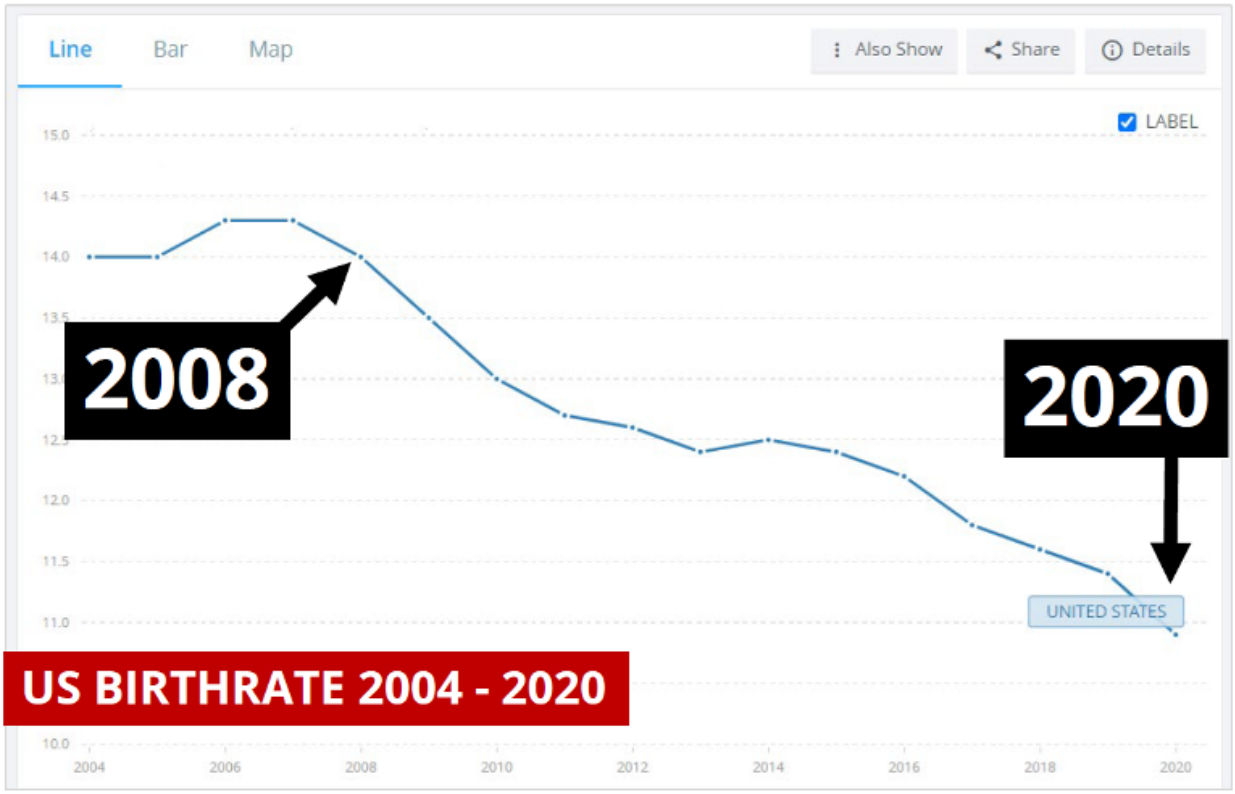
In order to understand the dilemmas faced by IT organizations, it is necessary to illustrate the context just mentioned with a few figures.

Decline in Student Numbers

"*Total enrollment at the post-secondary level fell to 16.2 million in the spring of 2022, marking a 4.1% year of decline, or 685,000 students.*"[31]. This decline is linked in particular to a continuous demographic decline in the United States since 2008. Other reasons and a more detailed analysis of the populations and institutions affected are included in the introduction to this report.

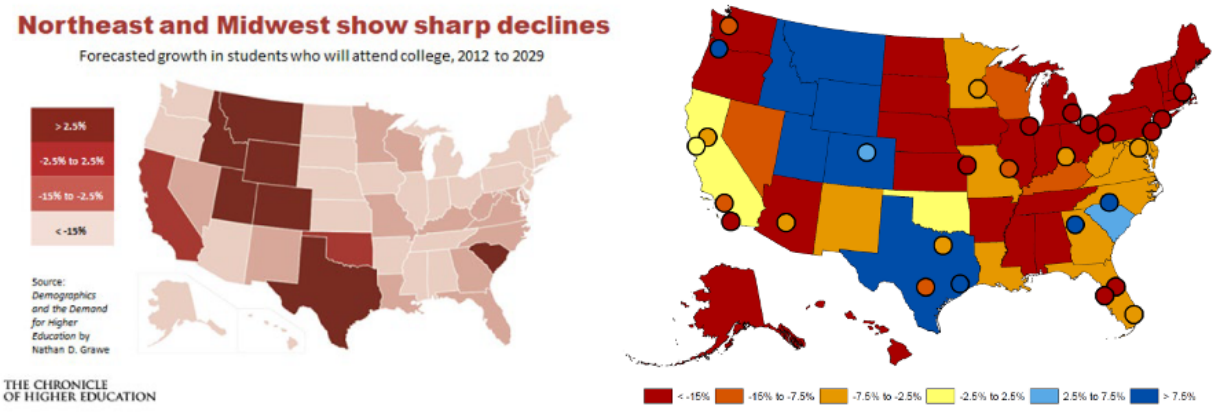
[30] *What Levers Can Higher Education IT Pull to Move from Woe is Me to Onward and Upward*, Dan EWART (University of Idaho), Kirk KELLY (Vantage Technology Consulting Group)

[31] Source: National Student Exchange Center, May 2022



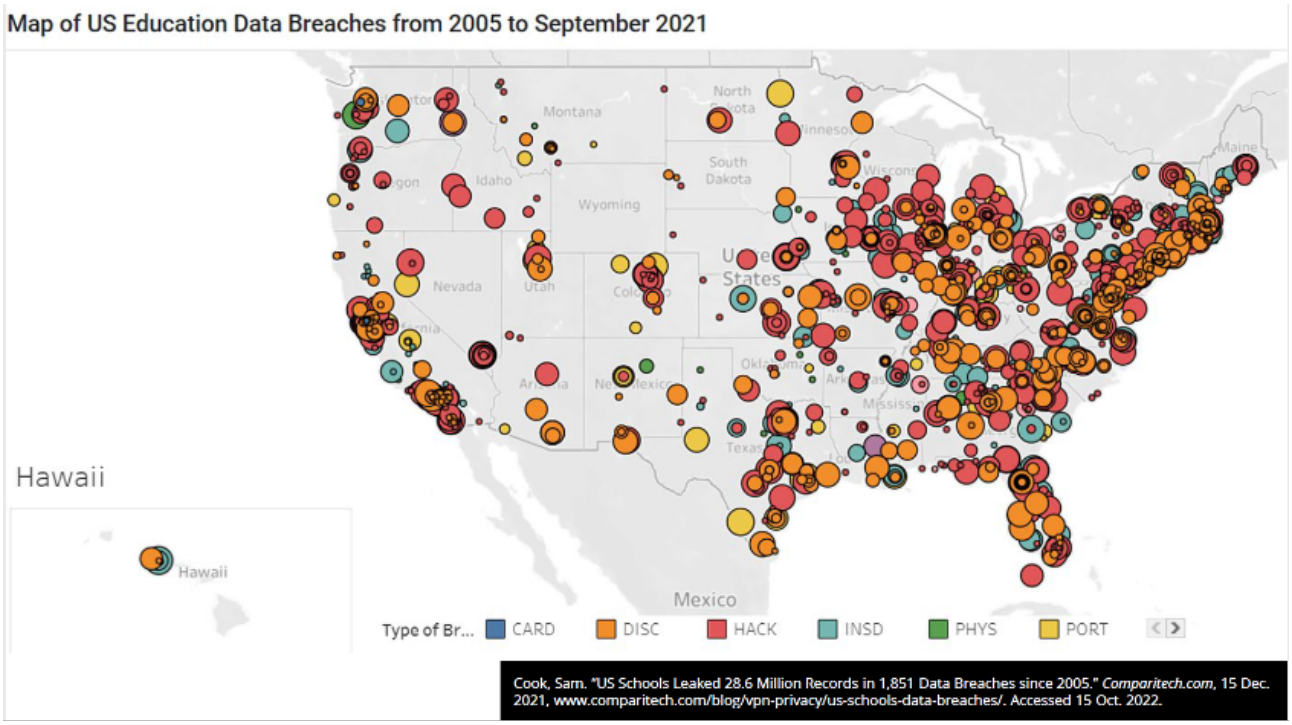
"Birth rate, crude (per 1,000 people) - United States" *The World Bank*, 2022, https://data.worldbank.org/indicator/SP.DYN.CBRT.IN?end=2020&locations=US&start=2004&view=chart.

Projected College Attendance



Increased risk of cyber attacks

”Since 2005, schools and universities across the United States have suffered more than 1,850 data breaches affecting more than 28.6 million records”[32].



As student enrollment declines, revenues are falling and IT budgets are expected to decline over time if they are not already.

Cyber risk management costs are rising and CIOs are spending more and more time on cyber risk management.

Hardware and software procurement costs also continue to rise. As revenues decline and costs increase, it becomes necessary to manage priorities related to the institution’s strategy.

Joe Licata (consultant, Canyon GBS) proposes a "survival kit" in four main actions illustrated by concrete examples in institutions[33] :

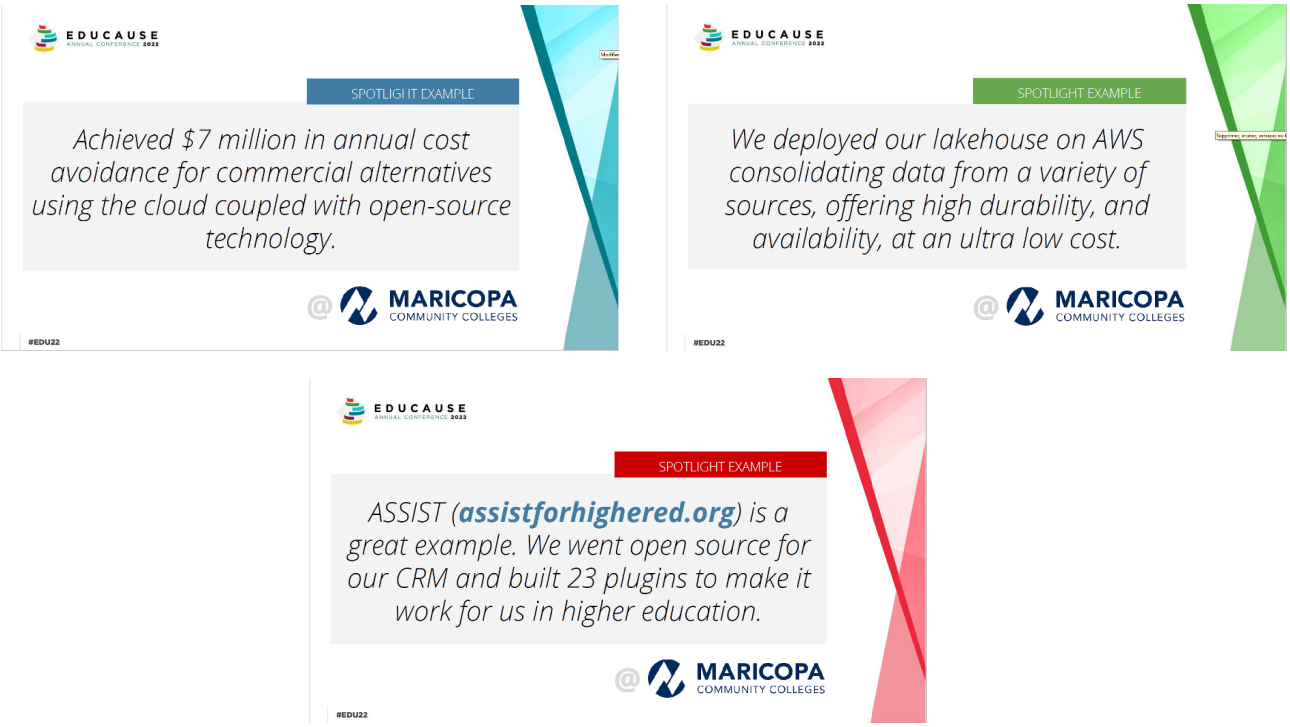
- Invest in the Cloud :
  - Understand/Analyze IT costs
  - Rework budgets by nature (investment/operation)
  - Build a dedicated Cloud team
  - Driving savings through cloud
- Consider non-traditional staffing candidates
  - Recruit internally
  - Consider non-technical candidates
  - Provide robust institutional training programs
  - Invest time in creating procedures
- Invest in Data Management

[32] Sam Cook, Comparitech, Décembre 2021

[33] *Overcoming Market challenges in higher education IT. Organization design and operation* : Joe LICATA, Product Management consultant, Canyon GBS

- Build on the Cloud
- Expand object storage
- Expand Datalakes (ETL without code)

- Reduce the amount of code held
  - Full software development is expensive
  - Developing technologies and leveraging open source
  - Use/develop plugins/modules to adapt the code to the needs of the institution
  - Secure specific development



Articulation with the topics of the Top-10 IT Issues

If we return more precisely to the first theme of the "Top ten issues" "Leading with wisdom" several avenues of solutions were developed throughout the conference in connection with the three actions proposed: a seat at the table, evolve, adapt or lose talents, enrich the leadership playbook.

A seat at the table: *Ensure that IT management is a full partner in corporate strategic planning*

A conference on the concept of integrated planning defines a sustainable approach to planning that builds relationships, aligns the institution and focuses on preparing for change[34].

[34] *Beyond the Seat at the Table. Integrated Planning as an Organizational Competency*, Nicole McWhirter (EDUCAUSE), Lyn Akey (Minnesota State University Mankato), Chuck Thompson (Yale University)

SCUP[35] conducted a study in 2015 with 285 university and college leaders. This illuminating study highlights the constraints and challenges that colleagues face in the planning process :

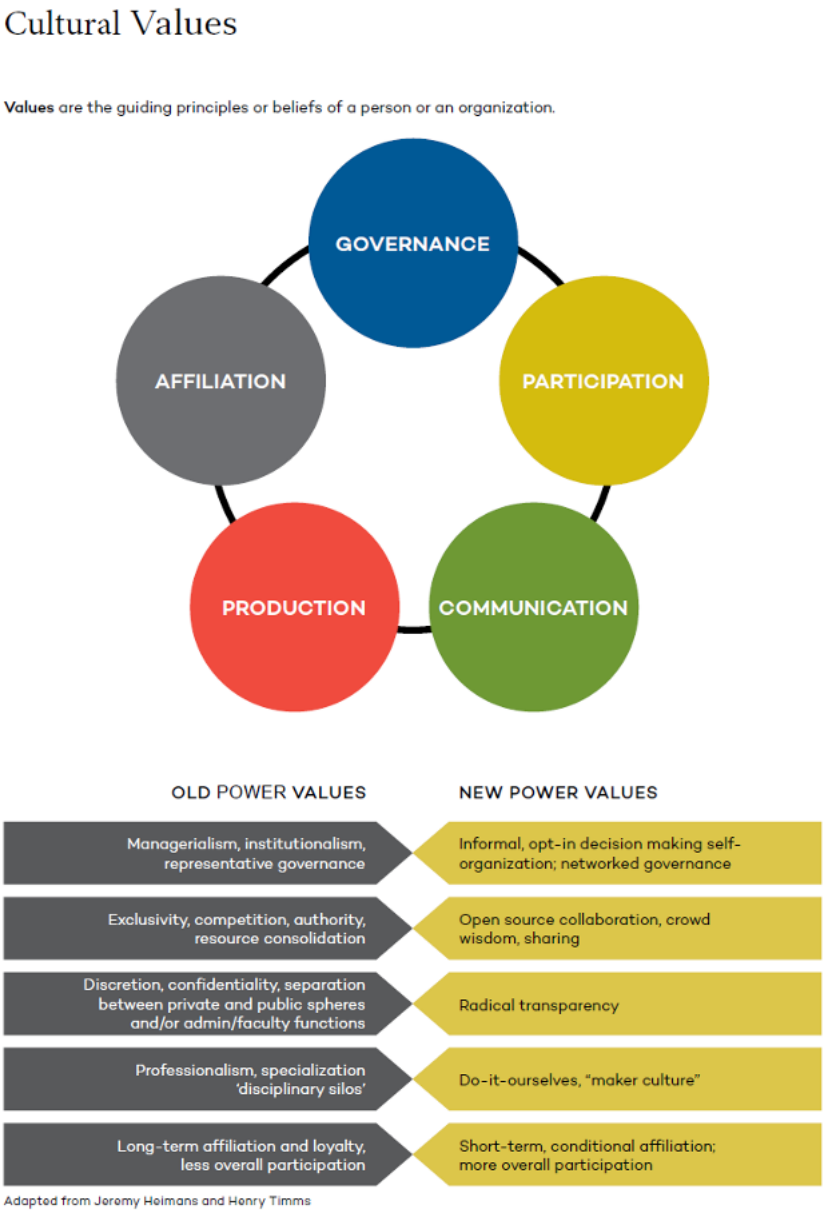
- time constraints: not enough time to plan properly
- financial constraints: not enough money to carry out the planning
- planning complexity: complexity of orchestrating the planning process
- long-term vision/planning: lack of clear vision for the future
- uncertainty/change: rapidly changing planning environment
- action/implementation: difficulty in carrying out the planning
- collaboration/cooperation: lack of active planning collaboration

Seven factors play an important role in the development of effective planning and will allow the organization to evolve in the four states of the maturity model proposed by SCUP: chaotic, responsive, proactive and optimized.

1. Emphasize what good planning is: Plan ongoing planning dialogs that involve all stakeholders; everyone must be at the table with an institutional objective and an objective of university viability.
2. Defining Effective Planning: Work with the team on how you can measure the success of planning and communicate this definition widely with governance so that the concept is shared.
3. Agree on priorities: agreeing on how time, money and resources are prioritized is a complex but essential process. Time is needed to work out differences and understand where priorities lie. Once priorities have been identified, it is incumbent upon leaders to stick to the plan and de facto resist changing priorities without going through the change management process to revisit planning. While adjustments are naturally necessary as the context evolves, care must be taken to ensure that priorities are understood and shared across the organization.
4. Integrate Plans: The real difficulty is a silo or vertical approach and a fief thinking. Planning efforts should seek to incorporate planning that is carried out outside your area of responsibility and to refer regularly to the overall planning of the institution.
5. Provide training: to change your institution's planning culture, you need to ensure that everyone gets the right training. Therefore, strong training for new recruits and ongoing training based on assessments and coaching are needed.
6. Be agile: Put in place concrete mechanisms to analyze trends and waves of change that will impact your institution. Include specific time in your planning to review and discuss potential changes. You cannot prepare for all the changes, but you can prepare for a flexible planning model, knowing that the change will inevitably justify course corrections.
7. Manage change: Before the change affects your organization, you must make changes within your organization.

In conclusion, the concept of integrated planning requires a comprehensive organizational culture.

[35] Society for College and University Planning



Evolve, adapt or lose talent: *Create a workplace that allows and supports career development of all kinds (to more or less responsibilities or to other functions/missions) to adapt to changes in personal and professional goals of staff and to promote a work/life balance*

One of the ways in which this theme was highlighted several times during the conference to attract talent is through student mentoring. Students are very often involved in the life of the institution on specific projects (at the University of Boulder they are for example fully associated with the design of the new student portal) or in day-to-day management. In order for them to find their place in the organization and, above all, to remain there, it is essential to accompany them as well as possible and, if possible, individually (mentor). The term "investment in mentoring" is even mentioned and represents one of the solutions to recruitment difficulties.

What are the keys to success in this direction[36] ?
Student employees should be treated as full employees. The manager must take responsibility for their success and progress and set an example for his team.

[36] Investing in Mentorship: Build a Future Workforce through Intentional Student Worker Management : Michele Bromley, Nick Buono, Rita Snodgrass (Portland State University)

It is important to give students real responsibilities while securing their activity. They must be trained and given technical skills.

The relationship is win/win for the student who develops his autonomy, acquires new skills and for the institution who sees the opportunity to build his future work force and rely on an invested and motivated workforce.

Mentoring also has the advantage of having a cheaper workforce compared to the number of hours worked.

In the area of human resources management, the DEI (Diversity Equity Inclusion) approach is also widely discussed at the conference. Americans are particularly sensitive to issues related to discrimination of all kinds with a particular focus on racial discrimination related to the recent "Black lives matter" movement.

The "Better Allies" approach is used to hire and retain a diverse workforce[37]. The *Better Allies* website[38] also offers a number of practical fact sheets, illustrations and infographics to promote the DEI approach and to establish a true corporate culture in this field.

Two concepts are defined for this approach :

- Advocate : one who supports or promotes the interests of a person or group
- Ally: a person or group that provides assistance and supports an ongoing effort, activity or struggle.

Mr. McIntosh stressed that a leader must be both a advocate and an ally to create an inclusive environment. He must help his staff to become a better manager and a better colleague.

He also speaks of "a perfectly imperfect ally" who is willing to make mistakes but keep trying, who recognizes when he is wrong or can do better, who comes out of his comfort zone, who listens and learns.

J. Johnson even suggests to the manager to follow specific maturity indicators that integrate the DEI theme in particular at the level of recruitment procedures but not only[39]:

- Percentage of diverse candidates in a total pool
- Percentage of diverse candidates receiving interviews
- Number of DEI related complaints filed against the department
- Budget allocated to specific training actions
- Percentage of leaders participating in DEI training actions
- Percentage of leaders achieving DEI-specific KPIs across the organization.

Enrich the management manual: *Lead with humility and candor to engage, empower and retain IT workforce*

First, few recipes for the perfect manager by NLF[40].

Strategies for managers: authenticity, spontaneity, improvement projects (stretch projects)

Strategies to develop your network: training in management, meeting colleagues, joining professional associations

Strategies to achieve its objectives: self-assessment, mentoring

Inclusive Leadership and Cultural Intelligence are always discussed in a presentation by Patricia Juarez[41]. She speaks of “toxic rockstar” when the manager achieves all his goals, meets all deadlines, is highly rated by his hierarchy but mistreats or even traumatizes his employees. Conversely, the inclusive leader will be brave, identify and solve systemic problems and strive to collect/build cultural intelligence.

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[37] *Why I Am an Ally and an Advocate, and Why You Should Be One Too,* Mac McIntosh (University of Richmond)

[38] https://betterallies.com

[39] Key performance indicators for DEI in higher EDIT : James_Johnson (Saint Mary's College of California)

[40] NLF : Next Leaders Fellowship. https://nextleadersfellowship.org/

[41] *Inclusive Leadership Strategies for Cultivating Courage and Cultural Intelligence as Key Traits,* Patricia Juarez (University of California, Berkeley)

P. Juarez has therefore built a program that will introduce the principles of CNV (Non-Violent Communication), that will also feed the collective intelligence and have a critical vision of systemic organizations and finally practice strategies to combat inequalities in our organizations.

Its program is based on the following concepts :

- BIPOC : Black, Indigenous, People of color
- DEIBJ : Diversity, Equity, Inclusion, Belonging and Justice
- CNV : Non violent communication

The approach is based on two strategies :

- Identify and address systemic structures by learning to identify the characteristics of white supremacy at work. Each feature is associated with "antidotes" to be applied
- CNV (a language of empathy) offers a way of speaking that will facilitate the flow of communication needed to exchange information and resolve conflicts peacefully. The CNV is based on compassion, harmonious cooperation, respect for oneself and others. With the CNV, it is necessary to learn and identify two types of languages: the giraffe and the jackal. The giraffe's attitude is based on respect, listening, empathy, honesty. It's a listening with the heart. On the contrary, the attitude of the jackal is based on blame, criticism, judgment and demand. The manager must therefore practice identifying the language of the jackal in his exchanges with others and avoid it at all costs!

In conclusion P. Juarez believes that most of the problems are related to the manager who does not adopt the right behavior to resolve a conflict with his employees.

Conclusion

In general conclusion on the theme "Leadership and Future Workshop", it can be said that, in a delicate context, the structures of the digital are focused on values essential for the institution; integration of IT projects into a dynamic and an establishment strategy that avoids silo approaches, seeks a more humane management that takes into account the well-being and individual projects of staff and that fights against discrimination of any kind.
IT managers need to do better with less. They must attract and retain talent, while evolving technical solutions to compensate for shrinking budgets and manage rising cyber risk.

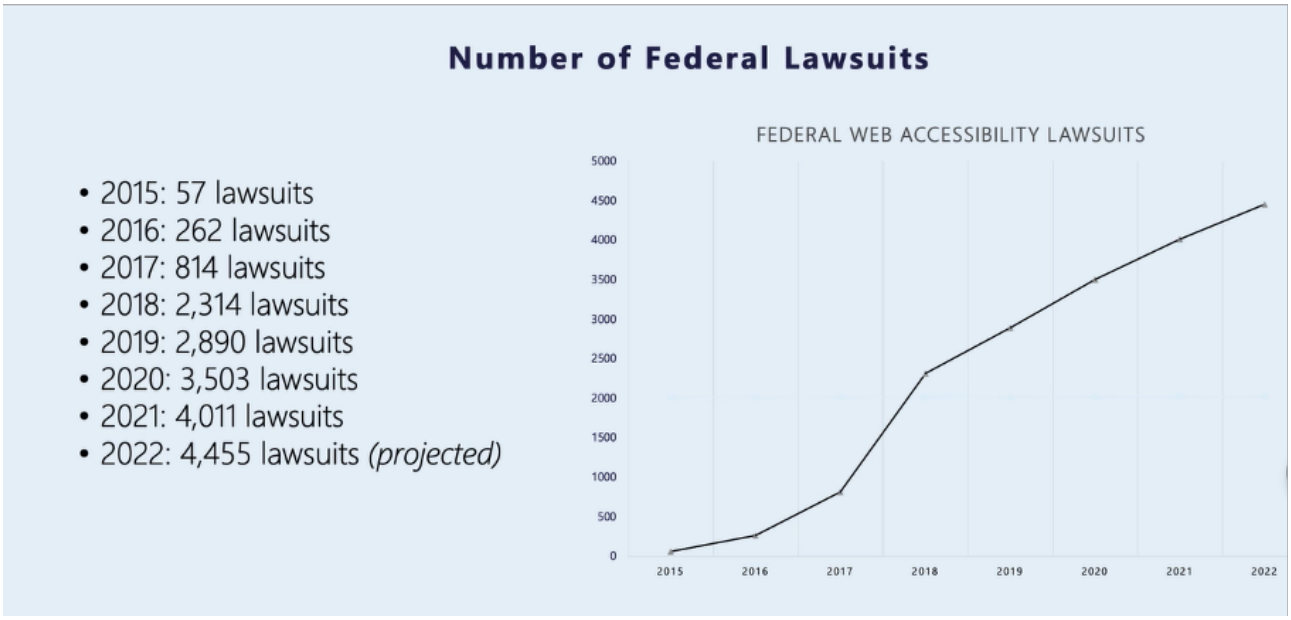
Digital Accessibility: gain an in-depth perspective on the topic

Christian Cousquer

The EDUCAUSE 2022 edition of was an opportunity to take a step back and open the focus on little-known aspects of accessibility through several online and Denver presentations.

Digital Accessibility seen through the prism of Justice and Law

In a remarkable online session entitled "U.S. Law and Web Accessibility", Ken Nakata presents the Americans with Disabilities Act (ADA) and its legal and judicial implications in the United States. Ken Nakata was for twelve years Senior Trial Attorney at the U.S. Department of Justice and contributed to the implementation and drafting of some of the articles of the ADA and Section 508, which means that this person is one of the best placed to present them. Indeed, there have been quite a few events in recent years on the judicial front of digital accessibility, such as the 11th Circuit's Winn-Dixie opinion and the court's subsequent decision to overturn that opinion only a few months later. As a result, an almost exponential increase in the number of digital accessibility lawsuits filed have be noticed.

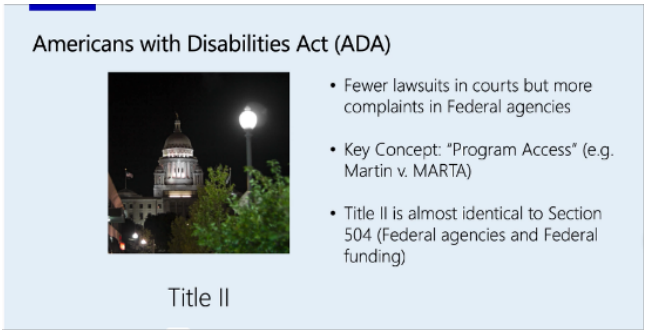


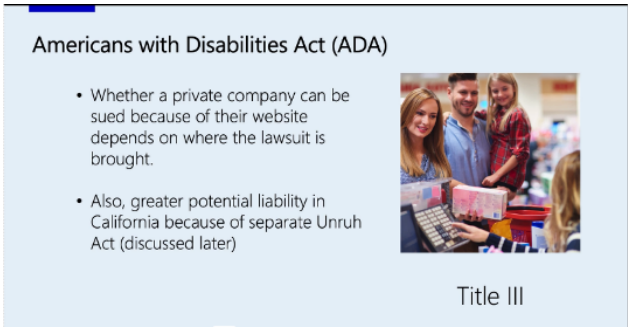
Miami's district courts (where most of the web accessibility cases take place) are slowly returning to normal now that the storm has passed. Meanwhile, the complex "nexus" standard for web accessibility continues to cause headaches, with large cracks appearing in Pennsylvania, New York and California.

What is Americans with Disabilities Act ?

The Americans with Disabilities Act of 1990, also known as the ADA, is a law passed by the U.S. Congress and signed into law by President George H. W. Bush on July 26, 1990, and amended and signed into law by President George W. Bush with changes effective January 1, 2009. The ADA is a sweeping civil rights law designed to protect the people of the United States from discrimination based on disability. It provides anti-discrimination protections for Americans with disabilities similar to those in the Civil Rights Act of 1964, which made it illegal to discriminate based on race, religion, sex, national origin, and other characteristics. In addition, compared to the Civil Rights Act, the ADA also requires employers to provide reasonable accommodation to employees with disabilities and imposes accessibility requirements on public accommodations. While the ADA applies to all U.S. states, any difficulties result from the fact that enforcement is a matter for each state's courts.

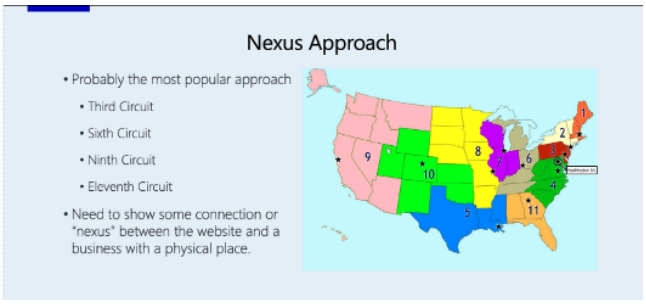
Title II of the ADA refers to and governs the accessibility of federal agencies and organizations receiving federal government funding, including American universities. Title III governs the accessibility of private organizations and is the subject of most of the legal disputes concerning digital accessibility around the complex concept of « nexus » (*link* in Latin)





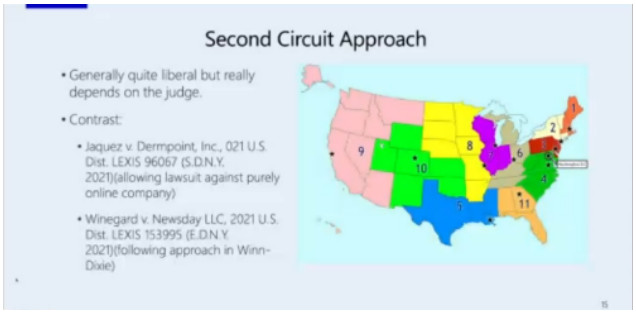
The nexus test is a statutory requirement of Title III of the Americans with Disabilities Act (ADA) used by most courts in this country. Because it is found in Title III of the ADA, it only affects private sector organizations and has no effect on public sector organizations.

The nexus requirement exists because in the language of the ADA, it prohibits discrimination by a "place of public accommodation" - and most courts take the word "place" very seriously. In most jurisdictions, discrimination that does not occur in a physical place of business (for example, through an inaccessible website) is not covered by the ADA at all, unless there is a nexus between that discrimination and such a physical place of business.



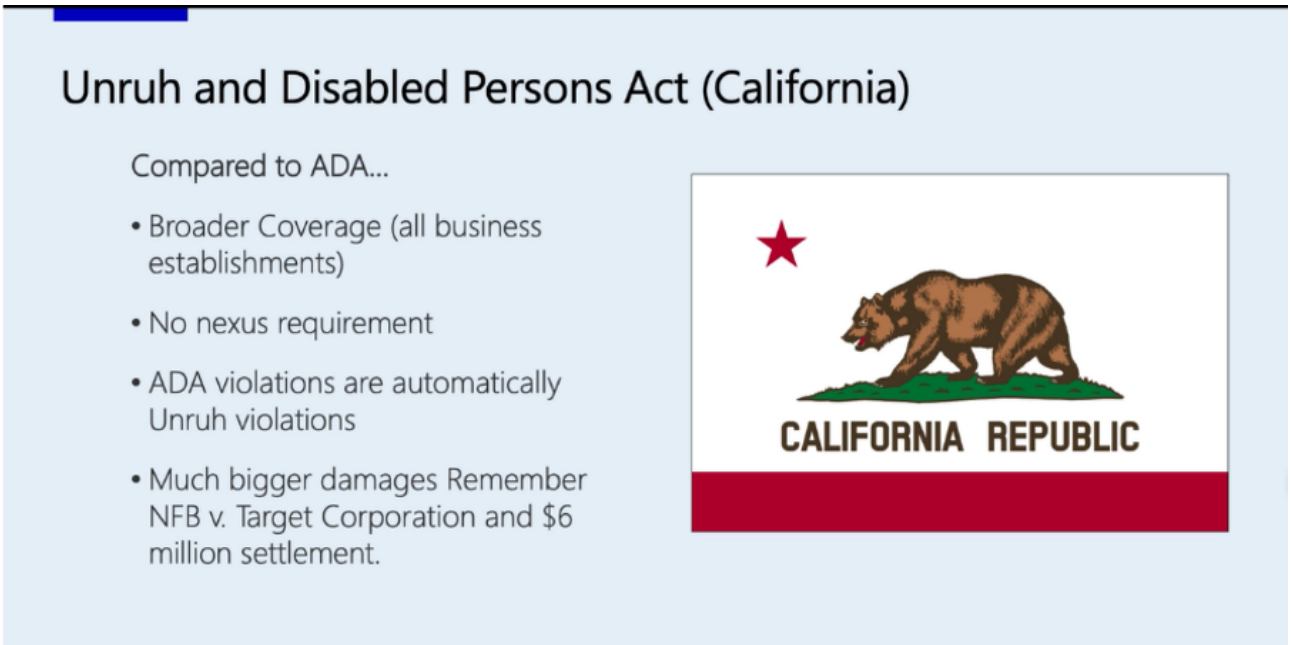
This approach is followed by federal courts in the Third Circuit (Delaware, New Jersey, Pennsylvania, and the Virgin Islands), the Sixth Circuit (Kentucky, Michigan, Ohio, and Tennessee), the Ninth Circuit (Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, Washington, Guam, and the Northern Mariana Islands), and the Eleventh Circuit (Alabama, Georgia, and Florida). Because Florida and California have been the most popular places to bring web accessibility lawsuits, the nexus approach has a very significant impact on web accessibility litigation.

A few jurisdictions are taking a more enlightened approach when interpreting the term "place of public accommodation" and recognizing that the ADA is intended to cover disability discrimination even in non-physical places like the internet. For example, in the First Circuit (Maine, Massachusetts, New Hampshire, Puerto Rico, and Rhode Island) and the Seventh Circuit (Illinois, Indiana, and Wisconsin), federal courts allow an ADA claim against a purely online company.



Other circuits are split between these two approaches. For example, depending on which judge you are facing, federal courts in the Second Circuit (Connecticut, Vermont, and New York) sometimes follow a strict nexus approach (see, e.g., Winegard v. Newsday LLC, 2021 U.S. Dist. LEXIS 153995; 2021 WL 3617522 (E.D.N.Y. 2021)). Or sometimes follow a more liberal approach (see, e.g., Jaquez v. Dermpoint, Inc, 2021 U.S. Dist. LEXIS 96067 (S.D.N.Y. 2021)). This point is important to remember, as New York is another prime venue for bringing web accessibility lawsuits.

Of course, this division among the circuits (and within some circuits such as the Second Circuit) creates enormous confusion for American businesses. Because websites allow modern businesses to have customers all over the country, they become susceptible to litigation (and these different approaches) from anywhere. For example, about two years ago, what happened to Sportswear, Inc, a Seattle-based company that couldn't be sued where it was located for its inaccessible website, but found itself defending an ADA lawsuit on the other side of the country.



And what was complex is even more complicated because the state of California has passed the Unruh and Disabled Persons Act, which systematically punishes non-compliance with accessibility even more severely than the ADA. It all depends on where the complaint for inaccessibility of a website is filed.

Location, Location, Location!!!

- ADA Title III language prohibits discrimination by a "place of public accommodation"

Ken Nakata then details in a rather amusing way the defense strategies of organizations for lack of accessibility. All these strategies turn out to be losing in most cases.

Defense #1

Can't We Just Post Our Customer Service Number Instead of Making Our Website Accessible?

Defense #2

I Don't Control the Content So Why am I Being Sued?

(aka "Lack of Ownership or Control")

Defense #3

The Plaintiff Isn't Interesting in My Business Anyways

(aka "Standing to Sue Part 1")

Defense #4

No Harm, No Foul

(aka "Standing to Sue Part 2")

Defense #5

I Just Settled a Similar Case and Now I'm Being Sued Again?

(aka "Mootness and Res Judicata")

Defense #6

I'm Being Sued in a Court That's Thousands of Miles Away?!?!

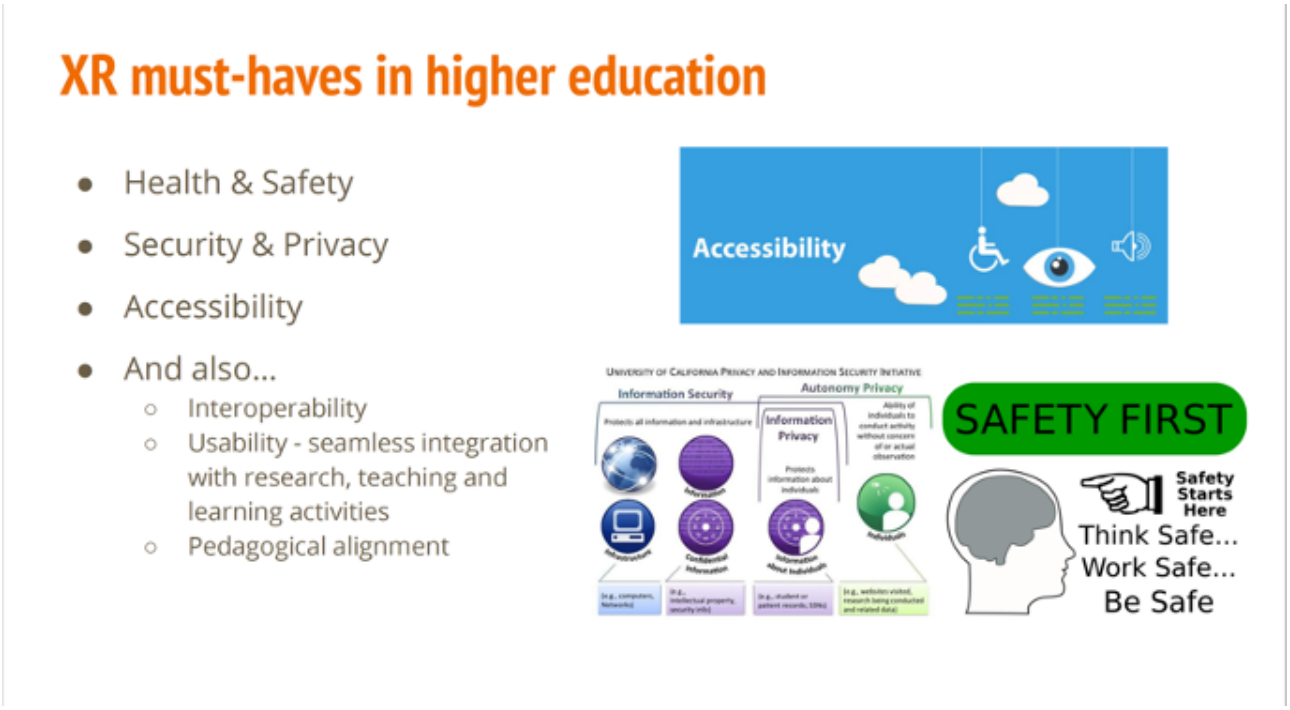
(aka "Personal Jurisdiction")

Towards a true strategic policy of digital accessibility

Another way to understand the challenges inherent in accessibility deficiencies was presented by Michele Bromley and Jerrod Thomas in their presentation "Inclusivity in Practice: Developing and Evolving a Digital Accessibility Policy". This is the implementation of a true digital accessibility policy at a university level. And this is a true institutional change that requires more than a grassroots community investment, but evolving support strategies and buy-in from all stakeholders. This sustainable change for a high-stakes systemic transformation requires strategic policy.

Michele Bromley details the role of Portland State University's Information Technology Department in navigating the various bureaucratic barriers and change management strategies associated with the development, adoption and evolution of an institutional-level strategic policy on digital accessibility. The challenge is to convince all levels of the institution that digital accessibility should not be seen as a constraint, but as an opportunity to innovate. Because all too often, accessibility issues are considered to be the neighbor's problem.

In the academic eXtended Reality community, this approach of taking accessibility as an opportunity to innovate seems quite prevalent. Many of its members have understood this.



To conclude, it should be noted that the W3C is in the process of changing its standards and the way it implements them; moving from a current principle (for 25 years) based on an obligation and sanctions on results to obligations of means (measurement, professions, management, indicators, training, etc.). And there with obligations of means any jurisdiction in the world knows how to sanction (even for the example). This is evidenced by this W3C working document entitled "W3C Accessibility Maturity Model"[42].

The W3C Accessibility Maturity Model is a guide for organizations to evaluate and improve their business processes to produce digital products accessible to people with disabilities. Using the W3C Accessibility Maturity Model will provide organizations with informative guidance (guidance that is not prescriptive and does not set requirements) on improving accessibility policies, processes and outcomes. The reader can notice that this document is designed to work for any size organization, from small to large businesses or government agencies. In addition, it is meant to be independent of the requirements set forth in relevant accessibility technical standards, such as the Web Content accessibility Guidelines (WCAG).

[42] https://www.w3.org/TR/maturity-model/

Learning Spaces : the turning point of Hybridization

John Augeri

Challenges and opportunities of Learning Spaces in the Hybrid & HyFlex configurations

If the EDUCAUSE 2021 Annual Conference had already begun to address the issue of Learning Spaces from the perspective of their articulation with the Hybrid and HyFlex configurations that have emerged from the pandemic, this trend has been largely confirmed by the 2022 edition. Indeed, more than their proper design, it is the matters related to the integration and positioning of these spaces in new schemes mixing face-to-face and distance learning that have concentrated the exchanges.

As already discussed in 2021 in a session given by the author of this article[43], Hybrid and HyFlex configurations represent both an opportunity and a challenge for Learning Spaces. Indeed, these configurations imply a potentially reconsidered face-to-face learning environment, especially compared to the potential and convenience of distance learning, which is more integrated into academic strategies, in a logic that consists in getting an added value from each of the modalities. In other words, the face-to-face approach, through the environments on which it is based, must be able to provide exclusive affordances in relation to a distance learning approach whose industrialization forced by the pandemic would have potentially given it an unprecedented legitimacy. The latter's inclusion in the long term (i.e. beyond a response to an emergency situation), however, would not be limited to a simple duality of competing modalities, but rather in a logic of hybridization that would act as a trigger allowing Learning Spaces to go beyond an experimental level of which many of them were blocked until then.

Thus, and in parallel to the conceptual approaches of the Hybrid and HyFlex configurations that we address in a specific chapter of this report, the debates held during the conference confirmed a systematization of the (re)conception of Learning Spaces as tools catalyzing a pedagogical inflection that they historically claimed to carry, but also being articulated in alternatively (Hybrid configuration) or in simultaneously (HyFlex configuration) with the remote modality. This trend was very clearly expressed in the annual meeting of the Learning Spaces Community Group of EDUCAUSE and in a feedback proposed by the Thomas More University (Belgium). These issues, which imply strategic orientations naturally involving the institutions' stakeholders, were also addressed in a session specifically focused on the synergy between the Learning Space Rating System and FLEXspace.

[43] *Learning Space: International Challenges, Perspectives and Opportunities in the Post-COVID era*

Annual meeting of the Learning Space Design Community Group

During the conference, the EDUCAUSE Learning Spaces Community Group held its traditional annual meeting, during which four themes reflecting the current situation and the challenges of these spaces were mentioned and/or discussed. The tools dimension, addressed as every year especially through the Learning Space Rating System and FLEXspace, was thus completed by the articulation of Learning Spaces with Hybrid and HyFlex configurations, with the connected questions of Faculty Development, but also of perspectives in terms of inclusion.

Synergy between Learning Space Rating System and FLEXspace

The Learning Space Rating System and FLEXspace, two reference tools already discussed in several previous editions of this report, are becoming increasingly linked as they develop and evolve. In addition to a reminder of their respective purposes and complementarities proposed during the meeting, these aspects were treated in detail in a specific session[44] to which we return below.

Space creation and conversion guidelines for Hybrid and HyFlex configurations

The adaptation of Learning Spaces to Hybrid and HyFlex configurations obviously implies significant technological evolutions, in particular concerning the A/V equipment. These evolutions must in particular go beyond the installations often deployed in emergency during the first months of the pandemic, and which present for the most part limitations that have often impacted the perception that teachers and students may have had of multimodal configurations.

Faculty Development

In the context of the creation and conversion of spaces for Hybrid and HyFlex configurations, the Community Group underlined the fundamental character of the Faculty Development in the use of these spaces in these new contexts, and more globally in the consideration of multimodality in the design of courses. The hypothesis of a sub-working group specifically devoted to these aspects was raised, with the possibility of capitalizing on the achievements already made[45]

Inclusion

A strong topic within EDUCAUSE for several years now, the issue of inclusion was addressed through the lens of Learning Spaces. This same issue was addressed in detail in a specific session also held during the conference[46]. Its emergence in conjunction with the hybridization trend is based on the fact that hybridization - especially in its HyFlex form - can represent a lever for it, in the sense that these multimodal configurations, as well as the Learning Spaces that can enable or even catalyze them, can in this case represent a pathway to Higher Education for students who are subject to various constraints. This lever, however, must be based on an industrialized, sustainable, positive and on purpose hybridization, relying moreover on up-to-date environments and technologies. This is not only to support the inclusion itself, but also to provide equitable treatment between students choosing different modalities (here again especially in the case of HyFlex).

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[44] *FLIPP the Learning Space Planning Process with FLEXspace & LSRS to Engage and Align Stakeholders*

[45] https://unif.fr/cursus-enseigner-avec-le-numerique-2021-2022/ (in French)

[46] *Staying relevant: Designing Hybrid Learning Spaces to promote Student Success and Equity*

Feedback from Thomas More (Belgium)

Thomas More University, based in Brussels, presented in a specific session[47] its iterative process of converting classrooms to Hybrid and HyFlex configurations. Three main steps, illustrating a very significant evolution in the design and ambition of these classrooms, were detailed.

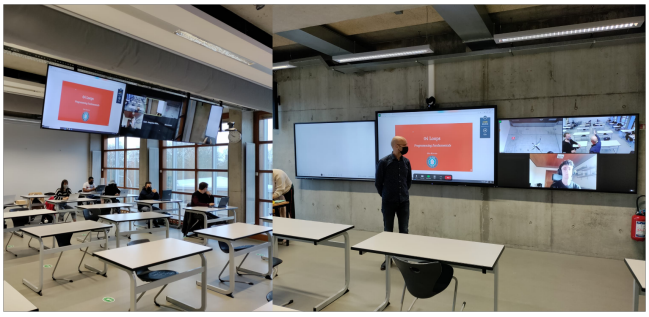
The Hybrid 1.0 model, implemented in September 2020 as part of a partial return to campus, involved 80 rooms. It was mainly based on the principle of extending the streaming and recording capabilities of the courses, notably by adapted A/V equipment, and the use of graphic tablets allowing the annotation of the content broadcasted in the room, streamed, or recorded. This installation, which was accompanied by a list of tips for teachers (maintain eye contact with the audience, use a student as a chat moderator, etc.), did however generate some dissatisfaction, particularly due to the complexity of the wiring.

The Hybrid 2.0 phase, launched in April 2020, first focused on correcting the shortcomings of the previous version. A team survey identified as main problems: the lack of freedom of movement, the non-adaptation to BYOD for teachers, the difficulty of use, and the annotation system. However, the same survey showed that 46% of the respondents saw hybridization as a long-term perspective.

These different aspects were translated into a first model of this second phase, the Hybrid Pro, which was based on an improved technical installation (automatic camera, better audio capture, BYOD, return to blackboard type annotations) and a more advanced integration with the videoconference system. Overall, it is the improvement of the user experience that has been targeted with automated workflows and simplified start-up procedures.

Thomas More did not however stop there, and continued his approach by conceiving a Hybrid Advanced model, which allows a higher level of interaction between students, and dual streaming (presentation + whiteboard).

Thomas More announces 62 Hybrid 1.0 rooms still in place (being converted), 13 existing Hybrid Pro rooms + 5 under construction, and 3 Hybrid Advanced rooms. Faculty advisories have also been updated. The university underlines that this experience has shown that such a project is not only a matter of technological choices, but also of support. It also considers that it is necessary to focus on the users, and to think about the degree of choice they have in terms of modalities.



[47] *Thomas More's Hybrid classrooms: from emergency backup to 'advanced hybrid'*

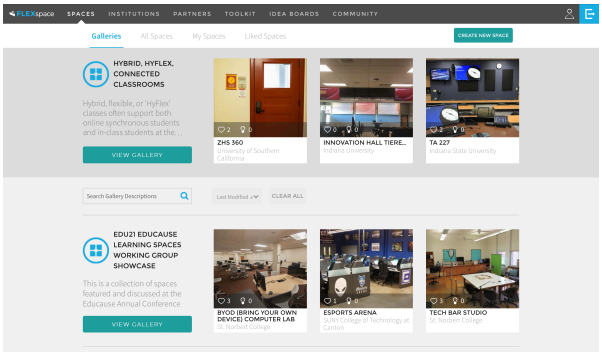
FLIPP: the Learning Space Planning Process

The pilots of the FLEXspace project, as well as two members of its advisory board (including the author of this article) led a session dedicated to the involvement of stakeholders in Learning Spaces projects based on the joint use of the Learning Space Rating System and the FLEXspace database, which have been systematically presented for several years at the annual conference, and thus in the previous editions of this report.

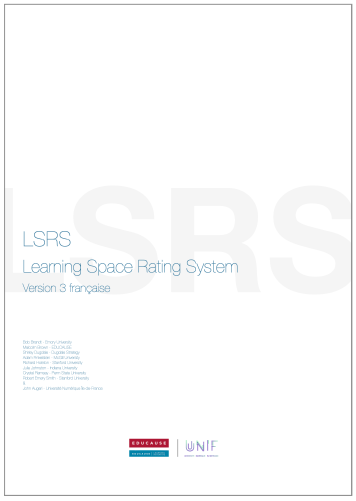
FLEXspace

This session reminded the main use typologies of the FLEXspace[48] repository:

- Visit different Learning Spaces virtually for inspiration, comparison, or networking;
- Contribute and enhance your own Learning Spaces by adding them to the database;
- Take advantage of the proposed toolbox to plan, design, support faculties, or evaluate;
- Create your own institutional page to list your Learning Spaces in the form of a gallery, to be shared with administration, faculty, support teams, contributors from your own institution, and with external audiences;
- Collaborate through Idea Boards to collect contributions from different stakeholders of a project, share prototypes, assessments or planning documents, and build a common approach.



Learning Space Rating System (LSRS)



This sessions also returned to the purpose of the Learning Space Rating System (LSRS) as a tool to evaluate the potential of a Learning Space in terms of its capacity to allow and support different teaching and learning modalities, first and foremost Active Learning.

This V3, still composed of a guide and a rating sheet, proposes a global approach to Learning Spaces projects by being structured around two main parts, each integrating a list of thematic criteria serving as a basis for evaluation. Part A focuses on institutional context, planning and support, while Part B focuses on the capabilities and characteristics of the various spaces: environmental quality, design and furniture, technology and tools, and inclusion.

Articulation between the two tools: the FLIPP process

The FLIPP process (FLEXspace Integrated Planning Process) aims to involve in a consistent way the different stakeholders of a Learning Space project: management, teachers, IT and A/V teams, planning teams, internal and external stakeholders. It relies on a sequential contribution of the Learning Space Rating System to proceed to a predictive evaluation, and of FLEXspace to base the reflection on existing examples and clarify the objectives.

The process consists in mapping the project perimeter, evaluating the different spaces with the Learning Space Rating System and then clarifying the issues and perspectives with data from similar spaces in FLEXspace.

[48] https://flexspace.org/

FLEXspace Integrated Planning Process: Data to Dream

A proven process to **ENGAGE and align** stakeholders: executive leadership, faculty, AV/IT, architects, facilities planners, internal/external contractors

Learning Space Rating System

- Gather "objective" data to gain insights about the current state of space effectiveness
- Examine at campus, school or departmental level

Strategic Enrollment Data

- Further considerations that inform campus priorities and project scope

FLEXspace database

- Advisory groups explore space examples to clarify goals and desired attributes
- Use a shared Idea Boards to create a collection of inspirational examples for discussion

Visit flexspace.org to create an account today!

FLEXspace 30

LSRS + FLEXspace Planning Process Details

Learning Space Rating System

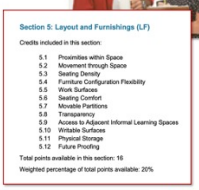
First, Form an LSRS "On the Ground" Rating Team

With your LSRS rating team:

- Level-Set Expectations and Process
- Invest time in reviewing LSRS Criteria
- Run a practice session

Key points:

- Inter-rater reliability is key!
- Student workers can help if properly coached
- Effective for internal benchmark
- Caveat about cross-institutional comparisons



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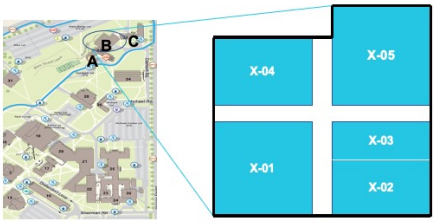
FLEXspace 34

LSRS + FLEXspace Planning Process Simulation

Learning Space Rating System

Map out the Project Scope



Analysis:

North End Buildings

Building A
Building B
Building C

Building B – three stories, all teaching and learning environments

Same footprint on all three stories.

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FLEXspace 35

Building B: LSRS Scores x Enrollment Data

Learning Space Rating System + Strategic Enrollment Data

New insights/priorities may emerge

Room	Cap	Type	Dept	LSRS Score
205	100	Large ALC	Soc	98
105	80	Large ALC	Psy	95
101	100	Maker/Build Lab	Psy	90
204	15	Seminar	Soc	87
301	70	Learning Commons	Edu	85
203	35	med classroom	Soc	80
202	35	med classroom	Edu	80
204	15	Seminar	Edu	76
104	15	Seminar	Psy	75
202	25	sm classroom	Soc	75
103	35	med classroom	Psy	70
305	60	Wet Lab	Edu	70
302	25	sm classroom	Edu	65
102	25	sm classroom	Psy	58
201	122	Tiered Lecture	Soc	50

When compared and overlaid with strategic enrollment data, a new investment case emerges!

Visit flexspace.org to create an account today!

FLEXspace 38

Hybrid/HyFlex trend: myth or reality ?

John Augeri & Maïté Sylla

Unprecedented presence in the Top-10 IT issues

Hybrid learning, which is based on the integration of traditional face-to-face and remote, in synchronous or asynchronous mode, has become widespread in the Higher Education landscape, especially since the pandemic. Requiring adapted material conditions and campuses, as well as redesigned pedagogical practices, the perspectives to which it claims to lead are confronted with strategic and operational issues that represent as many salient points that were discussed during the conference. These points are also addressed in an unprecedented way in several items in the 2023 edition of the Top-10 IT issues, already mentioned at the beginning of this report, but which we can recall here in order to illustrate the multidimensional aspect of the transformations linked to hybridization.

The item #8 regarding upgrading IT services to support remote/Hybrid working (*Updating IT services to support remote/Hybrid work*[49]) was presented by David Ayersman (New River Community and Technical College), Barron Koralesky (Williams College), and Emma Woodcock (York St University, UK). Today, tools, services, teachers, ICT staff, and learners can be found anywhere. This requires a rethinking of pedagogical practices, but it also requires a new physical organization of campuses, classrooms, open source learning platforms, and IT staff to support all actors (faculty and learners) wherever they are.

"It's not just the way we work that's become hybrid. It's the IT infrastructure and the services also. What IT departments are managing now is more complex, more widespread and far-reaching, more specialized, and more difficult to secure than ever before."

—Emma Woodcock, CIO, York St. John University, United Kingdom

The Hybrid teaching modality was also the subject of item #9 *Online, in-person, or hybrid ? Yes*[50], presented by Renee Pfeifer-Luckett (University of Wisconsin), Pablo Molina (Drexel University) and Sheri Prupis (Community College of Virginia). Higher Education must become more flexible to accommodate students' time and resource constraints, among other things. However, an academic strategy focused on learning and technology requires a strong and robust infrastructure. In addition, the implementation of technology-enhanced learning will have to take into account the pedagogical objectives and skills to be expected. This implies a significant investment of time by teachers and educational engineers in the design and implementation of technology-enhanced learning. The authors point out that despite advances in the use of new technologies, few institutions are prepared, or even recognize the need, to offer students highly flexible course modalities (e.g., traditional, online, self-paced, mediated, personalized courses). Institutional leaders must be willing to fund technology support resources as well, while recognizing and rewarding faculty pedagogical innovations that improve learner learning outcomes.

"One way I see higher education transforming in the coming years is a smarter use of remote learning. What's the right balance between in-person experiences and remote? We'll have more targeted use of remote learning. It's going to look really different across institutions. But all of us will be trying to find the best application for our given populations of students and faculty."

—Dukes Love, Professor of Economics and former Provost, Williams College

Finally, the greatest challenge today would be the change of culture, in order to bridge the gap between the way in which universities envisage the use of digital technology in teaching, the expectations of learners and those of teachers who must be made aware of and acculturate to the use of new technologies.

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[49] https://er.EDUCAUSE.edu/articles/2022/10/top-10-it-issues-2023-foundation-models#issue8

[50] https://er.EDUCAUSE.edu/articles/2022/10/top-10-it-issues-2023-foundation-models#issue9

However, these different issues do not call into question a strong trend that was widely observed during the conference, which clearly shows the medium and long-term perspective of a generalized, institutionalized and permanent hybridization. It is not the future reality of this hybridization that has been questioned, but simply the temporality and the modalities in which it will occur. Modalities characterized by multiple dimensions, which were reflected in the different sessions dealing with the subject.

Multidimensional range

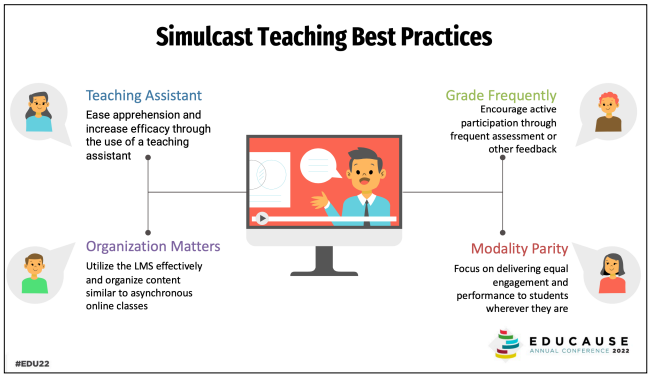
The Hybrid/HyFlex theme was directly or indirectly present in many sessions of the 2022 conference. Seven of them were devoted to this topic, with the most striking fact being the multiplicity of issues and perspectives that they addressed. Beyond the central issue of teaching and learning modalities, much broader fields are potentially impacted, and these were discussed in the sessions in question, which are listed here with their respective axis:

Academic strategies - *(Re)Defining Instructional Modalities: Is Anything Just Face-To-Face Anymore ?*[51]

Kathe Pelletier, Director of EDUCAUSE Teaching and Learning Program, and Jenay Robert, a researcher at EDUCAUSE, led an open discussion about the strategic issues involved in redefining teaching modalities, in this case the institutionalization of hybridization. This discussion focused in particular on the HyFlex, the definition of which is the subject of important questions, addressed below in this article.

Instructional design - *Scaling Simulcast: Moving from Pilot to Production in Synchronous Hybrid Courses*[52]

Georgia State University addressed the issue of hybridization, particularly from the perspective of the pedagogical engineering and organization required to redesign courses. It presented the different stages of its Simulcast plan, the lessons learned from the experience, and the perspectives it offered in terms of industrialization on a campus scale.



Institutional transformations - *Hybrid Learning at Scale: Digital Transformations of Classrooms and Learning Modalities*[53]

Zoom, Vanderbilt University and the University of California Riverside proposed a joint session on the institutional transformations that must accompany and support the shift to hybridization, which implies a systematization of digital uses.

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[51] https://events.EDUCAUSE.edu/annual-conference/2022/agenda/redefining-instructional-modalities-is-anything-just-facetoface-anymore

[52] https://events.EDUCAUSE.edu/annual-conference/2022/agenda/scaling-simulcast-moving-from-pilot-to-production-in-synchronous-hybrid-courses (diapos disponibles au téléchargement)

[53] https://events.EDUCAUSE.edu/annual-conference/2022/agenda/hybrid-learning-at-scale--digital-transformation-of-classrooms-and-learning-modalities-1

Learning Spaces - *Thomas More's Hybrid Classrooms: From Emergency Backup to 'Advanced Hybrid'*[54]

Thomas More University, based in Brussels, addressed the topic of hybridization through the conversion of classrooms, of which it proposed a feedback discussed in more detail in the chapter *Learning Spaces: the hybridization turning point* of this same report.

Student success and equity in experience - *Staying Relevant: Designing Hybrid Learning Spaces to Promote Student Success and Equity*[55]

Ohio University proposed a reading of the Hybrid/HyFlex trend in terms of student success and equity between populations using different modalities. In particular, it spoke of the levers that these devices can represent in this regard, provided that they are institutionalized in a positive way, in contrast to the emergency solutions put in place during the pandemic.

Administrative staff - *From Surviving to Thriving: the 4Cs of a Highly Effective Hybrid and Remote Workforce*[56]

University of Notre Dame, Wesleyan University, and Ithaca College discussed issues related to the hybridization of institutional staff activities. These institutions presented a variety of new approaches that were articulated with each institution's own culture.

Cybersecurity - *Cybersecurity Strategies for the Hybrid Campus*[57]

Finally, HP focused on the threats and IT security issues related to the reality of a Hybrid campus and the new flexibility and agility offered to different users: teachers, medical staff and students.

In addition to these seven sessions, there were several posters that reflected the diversity of issues related to hybridization, as highlighted by their respective titles: *Hybrid Learning @ Scale: Making it a Success*[58] (see bellow); *Next-Level Design: Program Development for a Hybrid Campus Strategy*[59]; *Hybrid Models and the Big Pivot for Online Learning Infrastructure*[60]; *Hybrid and the Future Workforce*; *Digital Transformation : The Path to Anywhere, Anytime Graduate Education*[61]; and *Designing Future-Focused Learning Spaces: Shaping Teaching and Learning for HyFlex Environments*[62].

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54 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/thomas-mores-hybrid-classrooms-from-emergency-backup-to-advanced-hybrid (diapos disponibles au téléchargement)

55 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/staying-relevant--designing-hybrid-learning-spaces-to-promote-student-success--equity

56 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/from-surviving-to-thriving-the-4cs-of-a-highly-effective-hybrid-and-remote-workforce (diapos disponibles au téléchargement)

57 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/cybersecurity-strategies-for-the-hybrid-campus

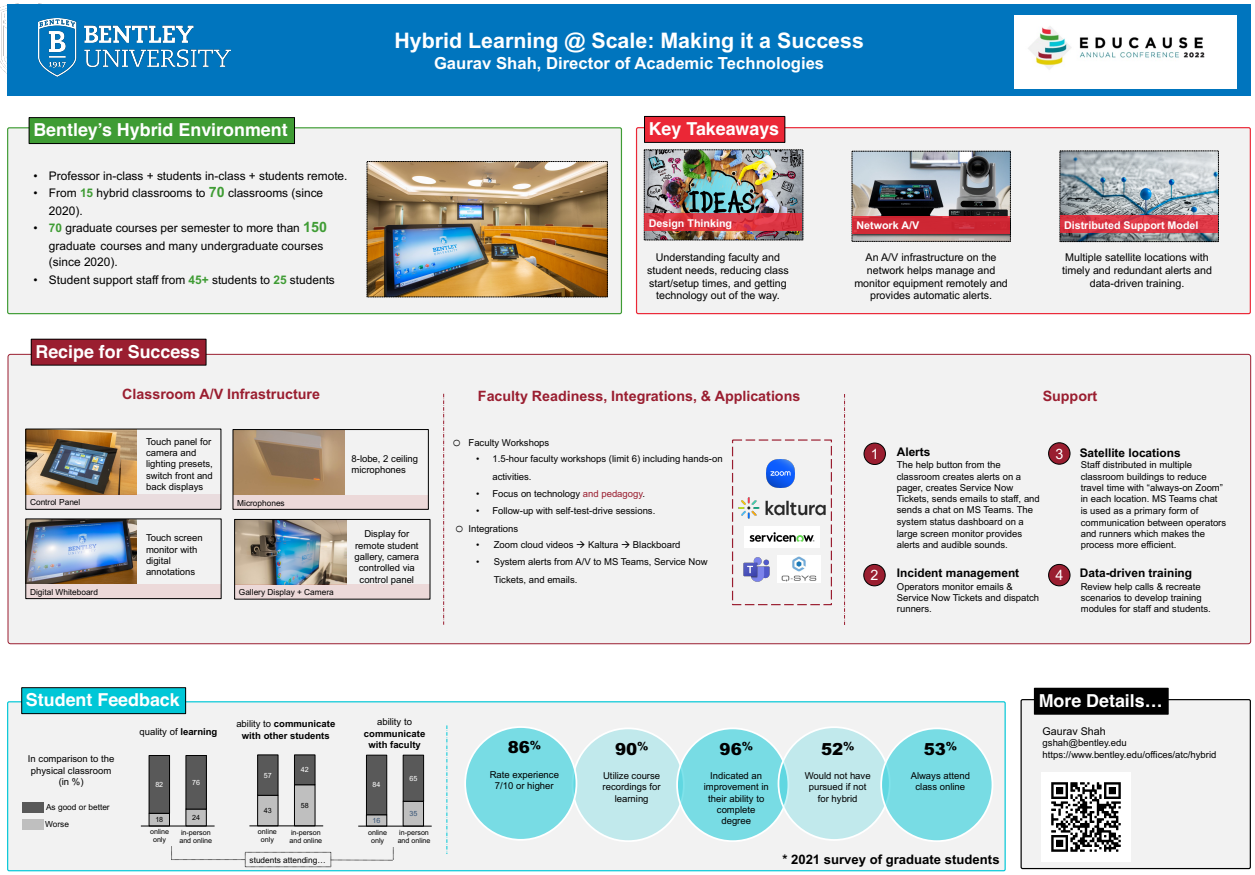
58 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/hybrid-learning--scale-making-it-a-success

59 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/next-level-design-program-development-for-a-hybrid-campus-strategy

60 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/hybrid-models-and-the-big-pivot-for-online-learning-infrastructure

61 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/digital-transformation-the-path-to-anywhere-anytime-graduate-education

62 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/designing-futurefocused-learning-spaces-shaping-teaching-and-learning-for-hyflex-environments



The HyFlex case

Among the different forms of hybridization, the HyFlex (Hybrid-Flexible), which presents important specificities, and which has been the subject of important development, has been directly or indirectly treated in many sessions of the conference. Several main aspects concerning it were raised during the various exchanges.

Definition

The HyFlex has had unprecedented exposure during the pandemic. However, the conditions of implementation that the pandemic has imposed have led to a distortion of its original concept. In addition to the fact that the HyFlex was first implemented in the late 2000s and early 2010s[63], almost a decade before the COVID-19 pandemic, it was built around two fundamentals: 1. the systematic proposal of a triple modality for the same course (face-to-face, synchronous distance, and asynchronous distance), and 2. the possibility for students to choose between these modalities for each session of the course.

However, the HyFlex usually implemented between 2020 and 2022 has focused on meeting the constraints of social distancing, while allowing a portion of the student contingent (determined sequentially by the institution) to return to face-to-face. In this sense, it was more a form of co-modality than a true HyFlex, the name of which nevertheless made its mark on the occasion, particularly in relation to the implementation difficulties mentioned below. Without giving in to this confusion, the conference was an opportunity to evoke what seems to remain a real problem to precisely define the HyFlex. The two fundamentals were thus regularly addressed, but in a dissociated way, with, on the one hand, questions relating to multi-modality (a reduced version of which may

[63] See Brian Beatty's - who created this concept - book: *Hybrid-Flexible course design*

therefore correspond to co-modality, with which confusion is common), and on the other hand, those relating to flexibility. The consideration of a form of HyFlex corresponding to the original definition of the concept thus appears to be relatively marginal in the implementations that have been mentioned. In addition to this problem of agreeing on a precise definition of HyFlex, there are three main issues linked to its implementation itself, which were mentioned at different times during the conference.

Integration into the academic strategies

The very concept of the HyFlex implies a reconsideration of the boundaries of the learning territory, but also of the temporality of access to knowledge, which questions the very notion of campus. The acceptance of this principle - with its benefits and difficulties - is necessary for any institutionalization process, and thus for a formal and permanent integration in the academic strategies of the institutions.

Industrialization of practices

The HyFlex systematically implies a simultaneous multimodality (face-to-face + synchronous distance learning) which systematically concentrates what is underlined as its main difficulty, especially by the teachers. They thus mention a phenomenon of overload linked to the need to take into account two distinct student populations, namely those in face-to-face and those in synchronous distance learning, with the underlying issue of ensuring the latter an equity of supervision, and more globally in the learning experience. As an extension of the institutionalization mentioned above, an industrial logic of teacher training and the implementation of continuous support (pedagogical engineering for the redesign of courses, and tutors for the management of multimodality) seem essential.

Update of physical and digital Learning Environments

Finally, the environments that are to host HyFlex courses must also benefit from an upgrade that typically represents what was lacking in the emergency implementations of the second phase of the pandemic. Already discussed in the chapter *Learning Spaces: the turning point of Hybridization* of this same report, this upgrade, which concerns both physical and digital environments, implies in particular audio-visual capacities and interactivity functions of sufficient dimensions to allow remote students not only to correctly receive the teacher's message, but also to fully participate in the activities.

Conclusion

Societal trends, particularly those based on the experience of the COVID years, justify the consideration of issues related to hybridization. Also addressed in the 2022 EDUCAUSE Horizon Action Plan[64], this topic was indeed a cornerstone of the Denver conference. Although the prospect of its generalization and institutionalization seems to be established, it nevertheless raises issues, the plurality of which was illustrated by the different sessions mentioned in this article, and which for some remain stumbling blocks. Among these, the HyFlex, whose exposure during the pandemic has allowed it to become part of the vocabulary of practitioners and decision-makers, concentrates important questions as much in relation to its definition as to the issues related to its implementation, while offering new perspectives in access to higher education. Future editions of the conference will be an opportunity to verify the concretization of these trends on campus and beyond.

[64] https://library.EDUCAUSE.edu/resources/2022/10/2022-EDUCAUSE-horizon-action-plan-hybrid-learning

The *Technician* and the *Pedagogue*: a Teacher's Subjective View on the conference

Aurélien Saïdi

The EDUCAUSE conference was back in-person after two (mainly) remote editions. It has been accompanied by many discussions about Hybrid teaching, the potentialities it offers, but also, its limitations (see the chapter *Hybrid/HyFlex trend: myth or reality*). If the word *opportunities* is on everyone's lips, the term constraints is at the heart of all conversations. While these opportunities have resulted in a deep and perennial overhaul of teaching methods, made necessary by the pandemic, they largely manifested at the conference on a commercial level through the omnipresence of technological solutions, their publishers and their distributors.

The session entitled *Hybrid Learning at Scale: Digital Transformation of Classrooms and Learning Modalities*, for example, was co-hosted and sponsored by Zoom. On such a topic, one would have expected a discussion on how teaching methods have been impacted, challenged and redesigned in recent years, in interaction with technological innovations. However, the pedagogical content was barely mentioned, leaving room for a discussion focused exclusively on Zoom, whose speakers have repeatedly praised the ease of deployment and the low staffing requirements for technical support[65]. If ease of adoption became the first criterion, what about the educational criteria? What about the obligation for students to be online for six hours a day? What about how to run a course online when those students are hopelessly mute? How can we foster interaction when participants are not in a face-to-face environment? How to prevent dropouts? Should teachers reconsider the content or the format of the session?

The IT Bias: When Technology became an End in itself

A very common idea suggests that technology would in essence embody a clearly identifiable pedagogy. This assumption seems to me to be erroneous. Radically different epistemologies can borrow from the same technology, sometimes in a way that is far removed from the pedagogical framework it is derived from. There can thus be a significant gap between the intended use of a tool and its actual use. This gap, which Pierre Rabardel (1985, p. 100) calls *catachresis*, requires that we distinguish between the *artifact* (as it is suggested to the user) and the *instrument* (as it is actually used)[66]. It invites us to question not so much the pedagogical ambitions that guided the creation of the tool (or the choices made for its implementation by the management of information systems or computer resources) as the actual epistemology of the *pedagogue*.

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[65] This software deployment has sometimes been accompanied by the provision of hardware to address students' under-equipment, an issue that particularly affects African and Latino populations in the U.S., as Arne Duncan, Obama's Secretary of Education, reminded us on the second day of the conference. The lack of equipment during the pandemic may have forced some students (e.g. in Oregon) to endure up to three hours of transportation to get to a WiFi connection at a fast food restaurant and be able to attend any course. A similar story was told during our visit to the Colorado Community College System (see Institutional Visits chapter), which voluntarily provided local populations free access to its WiFi network during the pandemic to erase some of the inequalities in access to equipment and infrastructure, and to limit as much as possible the disenrollment of African and Latino students (who were often required to help their parents by seeking gainful employment).

[66] Rabardel, Pierre (1995). Les hommes et les technologies : approche cognitive des instruments contemporains. Paris : Armand Colin.

What can be perceived as an IT bias goes far beyond the perimeter of the breakout sessions. Priya Parker, the final plenary session keynote speaker, who was invited to speak about 'The Art of Gathering', teased her audience and asked 'Are you all tech people?'[67]. The expression "Hybrid at scale" is the perfect example of this IT bias. For many private North American universities, it means instantiating a show room equipped for co-modal teaching and generalizing it to the entire institution[68]. A French faculty is more inclined to understand the term as the ability to teach to very large cohorts (several hundred or even a thousand students simultaneously). This difference in understanding is not only semantic, but also structural, not to say cultural. In France, universities remain highly dependent on public funding, which has not increased in line with student enrolment. They experience endemic difficulties in recruiting administrative and technical staff[69]. The refusal for any selection process has also resulted in a low teacher-student ratio. This situation is in stark contrast to the financial and social conditions under which private North American institutions operate. They benefit from a per-student budget that can be up to ten times that of the average French institution[70]. Moreover, in North American higher education, governance is more centralized, concentrated in the hands of presidents, chancellors, provosts, and deans, who report to a small number of trustees. The more collegial governance of French institutions (where boards and "councils" play an important role) can lead to a greater dilution of strategic decisions, vis-a-vis the information system or the educative policy, resulting sometimes in a form of heterogeneity or even inconsistency.

The differences between these two models are reflected in strong differences in the pedagogical concerns of institutions and their teams. Indeed, it is not the same to have to teach in front of groups of 25 students or in lecture halls of 300 (or even, as in medicine or law, of more than 1000 people). In the latter configuration, the immediate question is that of the individualization of learning (including follow-up and exam marking) within the framework of mass teaching, a question that inevitably leads to a rethinking of teaching methods. The North American perspective of "Hybrid at scale", as it emerges from this EDUCAUSE 2022 conference, often seems to be based on the ability to replicate a classroom, through technology, in the context of constrained online learning for all or part of the students. It is not surprising, in these conditions, where online teaching is seen as a natural extension of face-to-face modalities to a remote environment, that the technical aspects become an end in itself. However, this North American perspective is not reduced to Emergency Remote Teaching (already widely discussed during the 2020 and 2021 editions of the conference)[71]. More precisely, it does not consist in transposing as is a course that was designed for in-person interactions, but it offers quality online teaching that is similar to what students know (and appreciate) from the classroom, and that mitigates as much as possible the perception of distance (for online audiences vis-à-vis their on-site colleagues, and vice versa).

Christina Churchill, Director of Executive Programs, Distance Education and Online Education at the SMU Lyle School of Engineering, has thought deeply about the best co-modal configuration for the physical classroom[72]. Her solution is not just technical, in that it does not simply juxtapose audiovisual and computer equipment, but is designed to address pedagogical concerns together. The main pitfall of co-modal teaching is that it

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[67] https://events.EDUCAUSE.edu/annual-conference/2022/agenda/closing-general-session-priya-parker

[68] Among many other examples, Bentley University's presentation questioned the technical feasibility of moving from 15 to 69 equipped classrooms within the institution.

[69] These difficulties, which particularly concern legal and IT services, are mainly due to remuneration conditions that are insufficiently competitive with the private sector.

[70] According to Pierre-André Chiappori, in "Financement des universités américaines : des moyens concentrés sur une poignée d'institutions de recherche," Sophie Blitman, L'Etudiant EducPros, available at https://www.letudiant.fr/educpros/actualite/financement-des-universites-americaines-des-moyens-concentres-sur-une-poignee-d-institutions-d.html. These figures concern Ivy League universities. The differences are less significant with North American public universities, whose budget per student remains three times higher, on average, than that of French institutions (according to data available on the MESRI website: https://publication.enseignementsup-recherche.gouv.fr/eesr/FR/T496/la_depense_d_education_pour_l_enseignement_superieur/), and two-thirds of which are financed by the State. This question of the financing of American institutions has also been addressed several times in previous editions of this report.

[71] For more details on the topic of Emergency Remote Teaching, see for instance, Hodges et al. (2020), "The difference between Emergency Remote Teaching and Online Learning," EDUCAUSE Review, accessible at the EDUCAUSE website: https://er.EDUCAUSE.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning.

[72] Christina Churchill *Digital Transformation: The Path to Anywhere, Anytime Graduate Education,* session posters

marginalizes one half of the audience[73]. Either the online students, who are often the first victims of their face-to-face colleagues monopolizing the teacher's attention; or the face-to-face students, when the teacher spends too much time trying to make the technique work properly. It is therefore important to organize the learning spaces in such a way that the speaker can reach the whole audience equally, but also to aim at preserving the interactions that students would naturally have with each other (wherever they are watching the course from). This desire to avoid excluding any part of the audience is at the heart of Christina Churchill and her team's work[74].

HyFlex ou Hi-Flex ? An essentially Co-Modal Vision of Hybridization

While revisiting technique before content, our North American colleagues do not neglect the pedagogical aspects. However, their ability to transpose to distance learning methods, with great ingenuity and efficiency, prevents us from questioning – at least in the short term – the pedagogical layering, and invites us to focus more on material topics, such as equipment for students and teachers, or the reorganization of learning spaces.

These cultural differences between Continental Europe and U.S. can be seen even in the semantics. One of the most popular terms used at the EDUCAUSE conference was the famous "HyFlex" (Hybrid-Flexible), discussed in more detail in the article *Hybrid/HyFlex Trend: Myth or Reality* in this report. This term is as common as its scope is unclear to those who use it. More precisely, each participant uses it according to his or her own understanding. We note that the American HyFlex is less hybrid than flexible. It would be more appropriate to speak of a Hi-Flex, that is a high form of flexibility that should allow any student to follow the course synchronously, whatever the geographical or health constraints he or she may have. Actually, it is essentially a student-based flexibility. It is striking to note that teacher mobility is rarely addressed in the debates (it is implicitly raised when the debates focus on the issue of Learning Spaces). All too often, in this sense, Hybrid is a substitute wording for co-modal teaching rather than blended learning, a distinction that the educational sciences have been making for some fifteen years now[75] [76].

One of the most widely used definitions in the French-speaking countries is that of APOP, which describes Hybrid teaching as "an open combination of learning activities offered in presence, in real time and at a distance, in synchronous or asynchronous mode" (translation is mine)[77]. The key term in the definition is "open combination", which reflects the succession in time of the three forms of hybridization (face-to-face synchronous, distance synchronous, asynchronous) for each student, rather than the simultaneous conjunction of the two synchronous forms for the group as a whole. The various presentations we have seen adopt this second, very narrow, if not static, view of Hybrid teaching. In a dynamic pedagogical layering, the Hybrid modality "implies a face-to-face part and a distance part" (translation is mine)[78]. The same student will thus be

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[73] On this specific issue, see Binnewies et Wang (2019). "Challenges of Student Equity and Engagement in a HyFlex Course," in Blended Learning Design in STEM Higher Education, edited by Christopher Allan, Chris Campbell and Julie Crough, pp. 209–230. Singapour: Springer Singapore.

[74] One of the questions this work asks is how best to position online student feedback screens. They are placed at the back of the room, behind the audience, because a student – she says very rightly – does not like to draw attention to himself. So when the online student asks a question, his colleagues in the room, as they would in a standard configuration, are made to turn back to watch him speak. The whole device is thus entirely designed to replicate as well as possible the organization of an in-person course and to erase the incongruities of distance learning.

[75] The innovative aspect of the Hi-Flex approach (or HyFlex, as it is called) is therefore based on the degree of freedom offered to the student to choose the modality she wishes to use, and to change it as needed or as desired. It should be noted that, although in theory, asynchronous teaching is one of the "flexible" options offered to students, in practice, it was never mentioned in the breakout sessions we attended.

[76] For example, Valdès Didier. (1995). Vers de nouvelles formes de formations : les formations hybrides. DESS Dissertation, defended at Paris 2 University. See also Valdès Didier (1996), "Hybridation de la formation, autopsie d'une pratique et essai d'une définition, "Actes des Premiers Entretiens Internationaux sur l'EAD, CNED.

[77] See the APOP website at https://www.apop.qc.ca/fr/capsule/la-classe-hybride/.

[78] According to "Enseignement hybride : Comment articuler présentiel et distanciel?," available on the page https://pedagogie.ac-rennes.fr/spip.php?article4091

confronted - at different periods - to both modalities. As for the asynchronous component of the definition of APOP (central in flipped classroom type systems), it remains very clearly marginalized in the discussions (and often absent from those discussions). For it considers technical and pedagogical aspects as indivisible, Hybrid teaching must be a space for dialogue between the *technician* and the *pedagogue*. In most cases, moreover, the *technician* is above all an instructional or learning designer, who is rarely reluctant to go into the details of the content, just as the *pedagogue* is always somewhat a technophile. The *technician* and the *pedagogue* represent mostly the ideal types of two extremes that should be better married.

“It's not just about technological choice, but developing the proper didactics supported by technology,” our colleagues from the Thomas More University of Applied Sciences hastened to add, as they came to present how their institution has dealt with the COVID crisis (see the chapter *Learning Spaces: the Hybridization turn*). This presentation, more than many others, provided a series of pedagogical recommendations that can be valuable in co-modal teaching: focusing on the smallest group (on site or online), getting a student to moderate the chat, integrating moments of interaction into the teaching sequences (through votes, quick polls or quizzes), making frequent use of interactive visuals (concept mapping, annotations, etc.), systematically making the expectations explicit, favoring direct contact (over chat), fostering collaboration between students, etc.

Despite the absence of a teacher in the Thomas More team, the plurality of contributors’ profiles – an educational advisor, a director of the ITCS department, and a program manager – allowed both technical and teaching considerations to be closely intertwined, and accounts for the need for dialogue between the pedagogue and the technician. In practice, it takes two to tango! In the case of Thomas More, the (progressive) improvement of the technical aspects of hybridization was made possible by systematically associating the faculty through large-scale questionnaires and feedback processes, so that the technical device reveals itself to be a work of co-construction[79]. Nevertheless, the technical rather than pedagogical aspects – video capture, diffusion, annotation devices, etc. – remains central to the presentation, when it comes to evoking the different generations of learning spaces at Thomas More University, in order to meet the needs of hybridization.

[79] As noted during the breakout sessions, it is quite common to find teachers fully involved in technology development process. On the other hand, students are too rarely included in the reflection process (see the chapter *A Stakeholder approach: creating new pedagogical devices with Student Centric approaches* in this report). Often due to a lack of time, this lack of negative feedback rules, to use a concept specific to engineers, leads to a vertical thinking of cognitive processes and material conditions of learning. In the long term, it seems difficult to avoid student participation if we wish to converge towards an efficient Hybrid system. This participation cannot be limited to simple feedback but must be translated into active co-construction.

Hybridization as a Co-construction between the *Technician* and the *Pedagogue*

By the very nature of the event and its history, the EDUCAUSE conference gives a privileged place to the *technician* compared to the *pedagogue*, including within the Teaching and Learning track where, out of the 41 speakers listed, there are only 4 teachers or researchers, i.e. less than 10% of the total number.

Technical Support, IT	7
Sales representatives	6
Faculty, Researchers	4
Instructional / Learning Designers	11
Executives, Heads of administrative Staff	13

Source: author

More than half of the Teaching and Learning track speakers were instructional designers, heads of educational services, or those in charge of the educational strategy of institutions[80]. The majority of the teachers present intervened outside of these official tracks, within the framework of two 45-minute poster sessions, which were held daily within a partitioned area, at the periphery of the immense Exhibit Hall devoted to hardware and software publishers.

However, the large representation of instructional designers in the breakout sessions also has its advantages, in that it brings back to the forefront the (educational) co-construction process that emerges from the interactions between the technician and the pedagogue. The instructional designer cannot be confined to the role of a solution catalog. Beyond a simple enumeration or description of the different technical possibilities available, the teacher expects some sort of prescription from the designer. The designer must above all be a force of proposals, analyzing the needs, anticipating the uses, and enriching the initial pedagogy layer with functionalities or activities which would not have been initially thought of by the teacher. From then on, we can expect the instructional designer to initiate ideas that contribute to redesigning the learning sequence through the exchanges he/she has with the teacher.

This co-construction is underlined in a more or less explicit way by Georgia State University, where a system has been put in place to help with the continuous course improvement, through the decoding of dashboards, offering a visual and synthetic representation of learning analytics[81]. These analytics are subject to a series of iterations between the learning designer and the teacher who volunteers for the experiment. This process involves specifying the course objectives, quantifying them, selecting relevant monitoring indicators (evolution of student grades, retention rates, access rates to available resources, etc.), analyzing them (in particular, extracting atypical or unexpected behavior) and, finally, providing advice on how to effectively achieve the set educational objectives. These dashboards do not provide any absolute truths, nor do they constitute immutable evaluation grids from which it would be possible to mechanically deduce this or that source of modification to be made to the course. However, they represent an excellent basis for discussion, fertile ground for in-depth exchanges between the learning designer and the teacher, from which avenues of improvement may emerge. As the speakers emphasized, this exercise requires a high degree of trust between the teacher and the learning designer, a degree of trust that the Center for Excellence in Teaching and Learning (CETLOE) at Georgia State

[80] It is fair to point out that several managers or executive directors, more rarely a few instructional designers, are also former teachers. Therefore, the boundaries between categories are less clear than the table suggests.

[81] The term "learning analytics" is still too little questioned. Its scope includes data that are sometimes very far from the notion of learning, and which are not necessarily communicated to students. It would be more appropriate to speak of teaching analytics, or institutional analytics, depending on the data, and to restrict the term learning analytics to data that students are likely to reappropriate. This topic has been discussed in previous editions of this report.

University has succeeded in building through a long process of listening, but also by demonstrating its expertise[82].

Concluding Remarks

While EDUCAUSE has been able to broaden its coverage – historically dedicated to IT and educational technology issues – and eventually including teaching considerations, the majority of the conference's audience is made up of CIOs or IT department staff. This topic openness, already visible in the pre-COVID editions, as underlined in the previous editions of the French Delegation's report, was particularly exacerbated during the pandemic, and is reflected in the omnipresence of the hybridization topic to which the current report pays particular attention. The treatment of this question, by a predominantly technological approach, is certainly consistent with the original coloring of the conference, but sometimes tends to think in a dissociative (not to say schizophrenic) way about technique and pedagogy, rather than showing the co-construction on which these two complementary approaches to hybridization necessarily lead. In a desire to encourage dialogue and exchanges between the technician and the pedagogue, EDUCAUSE is organizing a second annual conference, the EDUCAUSE Learning Initiative (ELI) Annual Meeting, which focuses more specifically on aspects related to teaching and learning. It is aimed at both teachers and instructional designers, in order to better highlight their systematic approach to co-construction.

[82] Teachers tend to perceive any outside appreciation or criticism as an attack on their educational freedom. This position of mistrust towards instructional designers can also be interpreted as a mistrust towards digital tools, which are often accused of being a vehicle for cheap teaching and a source of savings.

IA and Student Success: finalized adoption and standardization

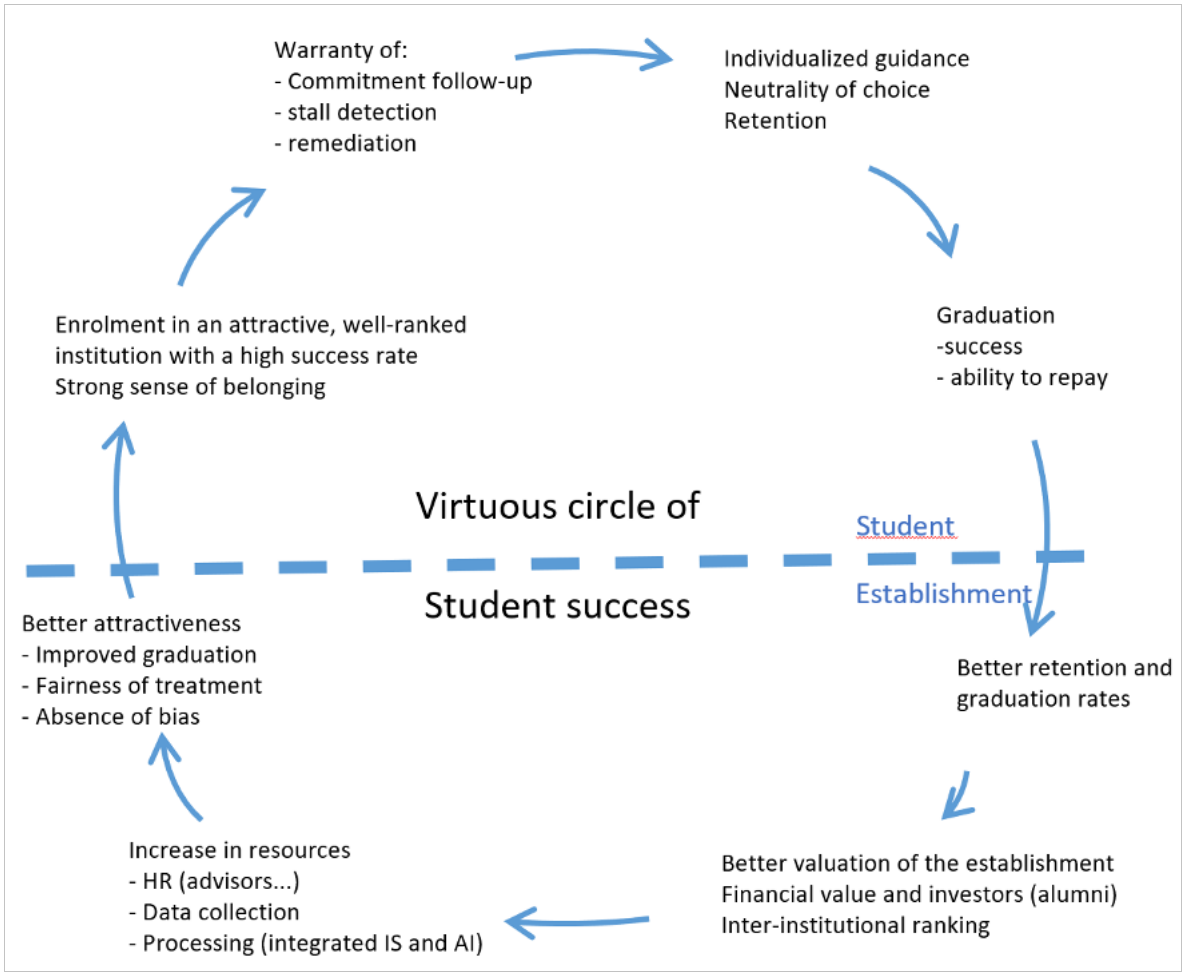
Bruno Urbero

Introduction

In the area of student success, artificial intelligence has made major contributions in an extremely short time. It took about 50 years to validate Tinto's (1975) data model. This model predicted that knowledge of all aspects of students' lives was correlated with prediction of success.

Holistic knowledge of the student is based on a huge volume of data where all aspects of the student's life must be taken into account: schooling, campus life and social environment. All of this data must be analyzed in real time for all students at the institution. Student success serves several purposes for both the student and the institution.

By supporting actions that enhance student success, institutions engage in a virtuous circle in which the mutual benefits are shared between the institution and the student.



In three years, the approach to the field has changed dramatically:

- Two years ago, it was about validating the proof of concept and demonstrating the hypothesis that holistic student insight not only detects and prevents students from dropping out but also significantly improves their ability to graduate
- A year ago, institutions that used AI to process student data to improve graduation showed significant results
- This year, all the institutions presenting this theme have adopted this approach. It is therefore a question of feedback based either on commercial solutions or on solutions developed by institutions and adapted to the specificities of the institution.

This assurance of having an IT model capable of supporting student success allows institutions to invest effectively in the key areas that are most strategic to them and that offer the best results/costs ratio for the benefit of students and the institution.

The question of whether or not to collect student data on a massive scale in light of the expected gains no longer seems to be a matter of debate, either for reasons of efficiency or for ethical reasons. Firstly, since the functional aspect has been demonstrated and secondly, since ethics goes hand in hand with the efficiency of the collection and the relevance of the analysis.

According to EDUCAUSE CDS (Core Data Service), four solutions share the LMS market. Out of 732 institutions analyzed, Canvas represents 41% of the solutions, Blackboard 28%, Moodle 17% and Brightspace 14%. The small number of solutions on the market allows industry to develop only a small number of connectors for analyzing educational data and for institutions looking to adapt institutional solutions to find solutions that are compatible with those already in place.

However, it should be noted that biases are beginning to emerge with the use of AI. First, the replacement of people by applications, while the student success model predicts the opposite. Second, algorithms can be biased and incentivized. Finally, there are increased cyber and data breach risks.

While waiting for the IS redesign, a lot of data remains in silos, IS remains fragmented, and the implementation of processes and technologies are often done locally. And furthermore, some models in use are not made, because they have not been developed, for Hybrid teaching and working.

Student Success through a racial equity lens

The University of Massachusetts[83] has implemented a strategic framework of student success support services designed for its 24 campuses. This project is led by the Department of Higher Education Research and Planning (DHE) with support from Deloitte Consulting.

This framework is aligned with a broader equity agenda to support low-income and racial minority students. The department's goals are improved retention and graduation rates, particularly focused on improving outcomes for Afro-American and Hispanic students.

In this program, student success is based on equity and engagement. Student success is primarily for students. It is also particularly important for institutions. The decline in the student population, referred to as the demographic cliff, is a major financial issue for university operations. However, while the total number of high school graduates is declining in most states, the number of students of color is increasing.

[83] Creating a Massachusetts Student Success Services Framework with a Racial Equity Lens – Bob Caron, Higher Education Specialist, Deloitte - Jen Tutak, Manager, Consulting, Deloitte - Clantha McCurdy, Senior Deputy Commissioner, Access and Student Success, Massachusetts Department of Education - Peter Fritz, Principal, Deloitte

Since 1980, university funding has declined by 40 percent. As a result, the number of students, and thus the revenue brought in by tuition, is critical to the University where administrative task remains the same and must do better with less as costs continue to rise without being able to be offset by tuition.

Several findings led to the establishment of this program:

- 60% of students at public universities do not graduate in 4 years while their debts increase. Most of those who fail are minorities;
- Aging workforce and competition for in-demand skills are leading to a critical talent shortage:
- 60 % of working-age people (ages 25-64) have an undergraduate degree or higher, and 10% of the population will have a higher level degree (graduate or post-graduate) by 2030
- Only 43% of Afro-Americans and 32% of Hispanics have a degree in the same age range :
- However, by 2030, these rates will increase to 51% and 50% for these two minorities, respectively:
- DeMany other ethnic biases are identified by DHE: success in first years, short credit accumulation, retention in second year, etc.

Disadvantaged students, of course, are furthest from success and make up the largest contingent of dropouts. To compensate for these biases and also to maintain the same level of student numbers, two axes are being developed: increasing the graduation rate and increasing the number of students of color.

A strategic plan has been put in place with a 10-year goal to eliminate racial bias in Massachusetts RHS to assist low-income students with a financial aid program.

All aspects of student success defined by holistic student knowledge based on student data analysis are thus implemented and directed toward low-income minorities and students. State-level funding to increase student support and staff resources enables the implementation of this program.

This results in earlier course start for students of color and low-income students, building trust with communities of color, aligning financial aid with cost of living, investing in institutions, and supporting all stages of the student journey. Student retention and sense of belonging to their institution are expected consequences of these measures and have been shown to be important to student success.

System-wide and campus-wide barriers to student success were identified for solutions:

- Change in leadership, unexpected end of funding
- Lack or limited adoption of data management tools
- Limited staff resources
- Disconnected siloed offerings that students do not access
- Highly decentralized systems without clearly defined responsibilities
- Funding and incentive program not targeted to groups that need it

Support is provided throughout the curriculum, from pre-admission (with appropriate funding where required) to guidance into the world of work after graduation (through alignment of student goals and curriculum: elimination of ineffective career opportunities)

The University's operations are student-centered so that students become involved in the life of the institution and develop a strong sense of belonging to their institution. This is supported by a dynamic initial structure for integration, support and services, career-oriented training, financial aid, etc.

Predictably, and consistent with the model, the use of AI has therefore enabled the University of Massachusetts to identify the key factors for student success as well as the barriers to success. It has allowed the institution to focus its strategic choices on racial minority and low-income students where the real need is and is consistent with the institution's medium-term growth needs.

Mentoring in Student Success

The limits of AI in student success come when the system's automated reminder messages to the student in the process of dropping out are no longer sufficient. It is then necessary to bring in a counselor to interact with the student. This requires significant human and financial resources. Mentoring by providing individual and personalized follow-up to the student is an approach that is at least as effective.

Georgetown University[84] has set up a communication interface between faculty, staff, students and alumni that allows them to interact on a daily basis. This basis of communication is particularly important to support the program of connecting alumni with undergraduate students whose professional experience of the alumni matches the student's area of interest. This mentoring system provides many opportunities: promoting professional and academic success, assisting in career exploration, and building important and lasting relationships for future careers.

The communication system implemented aims to improve student engagement, breaking down the silos of data systems (CRM, student life, etc.) by allowing for a holistic view of each student and putting their interests at the center of how the information systems work.

The goal of the portal redesign is to provide a flexible and scalable solution that meets the functional needs of students and also faculty and administrative staff. It should be noted that more than half of the institutions like Georgetown University are implementing virtual community solutions.

Again, the strong sense of belonging is always correlated with student success. In the first year, it is mainly a matter of retention, after which the habit of belonging is maintained even at the alumni level. They build a lifelong relationship with their institution and sometimes become its donors.

Salesforce, which provides the technology building blocks for Georgetown University's program, has a presence in all areas of the business and is now expanding its solution set by adding student experience integration. The company says data is central to modern management.

The common building blocks of student success are present in the solution: belonging as the basis for success, the need for holistic support of the student throughout the course (from enrollment to graduation), suitability for their future work and consideration of expected flexibility as well as diversity issues. For the latter, geographic access issues are taken into account in addition to minority and income criteria.

In conclusion, Georgetown University indicated that the maintenance of existing applications and technologies was preventing investment in modern technologies. Therefore, a disruptive evolutionary solution was chosen to implement this new communications system.

A community initiative

A Student Success Analytics Community Group (SSA CG) has been created[85] and is hosted by EDUCAUSE. It provides a forum for exchanges between people planning or implementing a data analysis system dedicated to student success. Staff from educational institutions, organizations and solution providers participate and share briefs, case studies, documents and reports.

The goal of this group is to develop resources for exploring, designing, facilitating, and evaluating student success analytics along four themes:

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[84] Future-Ready Institutions Put Students at the Center of the Experience, But How? - Navneet Johal, Director, Salesforce - Douglas Richard Little, Assistant Vice President, Georgetown University

[85] Student Success Analytics Community Group (CG) - Shannon Mooney, Data Scientist, Georgetown University - Maureen A. Guarcello, Program Evaluation, Compliance, & Assessment, San Diego State University - Linda Feng, Principal Software Architect, Unicon, Inc.

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- Preparation: assessing institutional goals and determining how analytics can contribute to them, creating a baseline, inventorying available data and IS status, planning an action plan ;
- Decisions: choose the actions to be taken by considering the ethical aspect of the use of the data as much as to correspond to the institution's expectations regarding student success;
- Outcomes: determining what to measure and what elements of success to influence without introducing bias among students;
- Analysis: selecting the data to be analyzed in qualitative and quantitative terms to provide the best indicators for decision making.

Through a community group supported by EDUCAUSE, a non-commercial group with no obligation to join, institutions can therefore find advice, resources, and exchange on how to implement solutions to analyze their data to increase student success. This group focuses on initiatives and findings that have broad applicability and can go to scale.

Various analytic approaches are covered such as: predictive and prescriptive modeling in addition to machine learning, artificial intelligence, and other data analytics applications. They address all phases of student life: teaching and learning, enrollment, retention, academic advising, career placement, or student support. While analytic approaches to research, institutional success, or other non-student areas are beneficial, this group focuses on areas that more directly improve the student learning experience in education.

Institutions that want to use AI to improve student success have alternatives to commercial solutions. They can build their project and take information from their peers and then choose the most appropriate commercial solution or take and repurpose a solution implemented by another institution.

… another community initiative…

More than 580 institutions have joined forces with 1EdTech[86] o share their uses of data in student success. 1EdTech, a membership-based professional association, is another institutional initiative. It is a nonprofit community partnership of academic departments, national education departments, and EdTech providers. This association provides the building blocks to create a platform with a shared ecosystem (access to product libraries).

The objective is to improve student learning by creating socialization applications. As student success is based on engagement, the creation of an application dedicated to the student and not an application focused on administrative use with an interface for the student, with data integration, is a prerequisite to achieve this.

The proposed solutions aim to improve student retention, cover a wide variety of programs and interests, and manage facilities and learning materials. They correspond to the state of the art in AI processing of all collected student data: learning platform, digital identity, learning data and analysis, data security and privacy, integrated assessment, best digital resources for study engagement.

The functioning of the association is based on information sharing (de-siloing) to promote projects. This requires that the proposed tools are capable of sharing data (with local variations in the ability to share and analyze data). The solution bricks proposed to members contribute to this objective.

[86] Designing Data for Student Success - Vince Kellen, Chief Information Officer (CIO) , University of California San Diego - Meggan Levitt, Asst Vice Provost & Associate CIO, University of California, Davis - Rob Abel, CEO, 1EdTech - Sean M. DeMonner, Executive Director of Teaching & Learning, University of Michigan-Ann Arbor

… custom business solutions

Delphinium[87] is an overlay to the Canvas LMS that increases its readability by making it more engaging and above all more fun. Its creators started from the observation that teaching is increasingly done online, but that most of the techniques used were based on face-to-face learning and therefore could not be correctly transposed to remote learning.

The company quantifies the cost of dropouts, both for the students and the institution, and compares it to the cost of its solution. For the institution, the costs are indirect, but very real, as having high dropout rates lowers the institution's rank in inter-institutional rankings, reduces its valuation and the commitment of its alumni as potential donors.

The company reports the following failure statistics. Low-income and underprepared students for distance education have a 10-15% higher dropout rate when online compared to face-to-face courses (Source Columbia University). 40% of students drop out within the first two years which amounts to 2 million dropouts per year where students are left with debt (Source National Center for Education Statistics). People without a degree earn $1 million less over their lifetime and are twice as likely to be unemployed (source Pew Research Center).

The company says that its solution implements strategies to motivate students to learn by training teachers and providing them with pedagogical tools, and reports a threefold reduction in dropouts and a twofold reduction in failures. This is thanks to the implementation of monitoring and communication tools for all courses using gamification, a nudge is used to redirect the student when a dropout is detected. The nudge is materialized by a message that should be short, personal, positive, early, encouraging, etc. and allows teachers to quickly connect with struggling students.

In addition to the obvious business aspect, the company is thus taking on all the aspects of student success highlighted by the analysis using AI. The normalization provided by AI (engagement in academics and campus life, sense of belonging to the institution, etc.) is therefore commonly accepted and used.

Taking Hybrid education into account

Today, the university experience is no longer just on the physical campus, but also in the digital environment[88]. It is up to the institution to reach learners where they are, i.e., to detect and respond to students' needs with personalized learning experiences.

The pandemic has had a dramatic amplifying effect on this finding. Combined with the demographic drop, both causes have contributed to the recent decline in enrollment and graduation rates. Analyzing data through AI provides strategic guidance to institutions and customizes the student experience to fit each individual case.

One proposed solution is not to have more students, but to provide them with better services and quality follow-up allowing them to be at a higher level (and thus ultimately improve their graduation). And this, in order to seek excellence in the student journey.

AI makes it possible to build individualized pathways for each student according to their expectations and needs. And therefore to use technology to reach students at an individual level and take care of them wherever they are, in class or remotely.

It is the students at the beginning of the academic cycle who must be the focus of attention. They are the ones who have the most difficulties and therefore the most likely to drop out.

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[87] Introducing Delphinium: Huge Improvements in Student Engagement and Success! - Jared Ray Chapman, Associate Professor, Utah Valley University

[88] Reaching Students Where They Are: The Power of Data and Analytics - Diana Oblinger, President Emeritus, EDUCAUSE Alumni - Timothy Renick, Executive Director, National Institute for Student, Georgia State University - John Baker, Founder, President & CEO, D2L

For institutions, the pandemic has been difficult to manage, especially with first-year students where there have been many dropouts. The importance of engagement is also emphasized in public education where the retention rate is about 50%.

Ever finer analyses

AI makes it possible to take data analysis further and further. The study of curriculum complexity at Kennesaw State University[89] showed that the more complex a curriculum was, the more likely students were to change direction without demonstrating that this complexity prevented students from completing their curriculum.

This analysis was done by following the use of the pedagogical platform day after day. It allowed us to measure the daily commitment of the students, but also to highlight their needs and to underline the importance of answering them, whatever the question asked. For example, the question "Where can I find help with my chemistry course?" must be answered within a timeframe that meets the student's expectations.

This has led to the establishment of a comprehensive system for providing person-to-person help. As with the implementation of advisors, the answer is not technical, but human and requires a change in the way people work both in the way they help students and in the way they design applications.

AI helps define what works and what doesn't work in student success. In particular, it emphasizes the principle of an individual curriculum for the student. And that the latter is made possible by the technology in place despite the difficulties of scaling up (53,000 students in the case of this university).

To help students, we must meet the expectations of those who are proactive and go after those who stay in their corner, and therefore detect them. In this case as well, the issue is one of human resources, not technology, and must tend to bring the needs of the students closer to the assistance provided, especially for first-year students.

Inequalities revealed by the pandemic

The pandemic caused a sudden switch to online versions of courses, revealing digital inequities. The inability to access the campus created additional disparities that primarily impacted minority and low-income students.

The lack of a computer and/or internet connection with online-only courses has become blocking for a part of the students.

Lone Star College (LSC)[90] rhas 80,000 students, 31.6% of whom received financial aid in 2022. Of these students, 90% have internet access at home. For the remaining 10%, 1/3 do not have a computer, 1/3 do not have internet, 1/3 have neither. To ensure that these 10% are not excluded from their education, the school has initiated a computer loan program and the provision of internet access points (WiFi hotspots).

Initially, exam results and income requirements were necessary to benefit from these loans. Over time, the conditions became less and less demanding until they were eliminated. These loan opportunities were extended to students already in the workforce and returning to school.

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[89] Connecting Curricular Analytics to Student Success - Kristina A DuRocher, Associate Dean of Academic Affairs, Kennesaw State University - Anissa Lokey-Vega, Assistant Vice President, Kennesaw State University

[90] Addressing Digital Inequities through Device Loaner Programs - Jeremy Simons, Director, Campus Technology Services, Lone Star College System - Butch Juelg, Sr. Associate Vice Chancellor, Technology Services, Lone Star College SystemCollege System

This loan program has allowed the collection of new data: location and time of connections and detection of anomalies highlighting usage drifts, theft, etc.

This $7 million program has been a key factor in student success. However, after one year, the rate of equipment loss and deterioration is 23%.

California State University (CSU)[91] has also implemented a loan program, CSuccess, for first-year students and those coming from other institutions. It spans 23 campuses and has 486,000 students. For this program that started in 2021, 89% of the students eligible for the program participated, which is a very high level of beneficiary buy-in for the program. Social media was used to promote it and to implement its rollout.

For many students, the computer provided was the first computer equipment introduced into the family. Half of eligible students are underrepresented minorities, half of undergraduates receive a Pell Grant, and about one-third of undergraduates are the first in their family to attend college.

99% of students reported having equipment. However, other than a telephone as part of the equipment, 1/3 of eligible students did not have a computer. Moreover, among them, the problem of access to the Internet was crucial, since only 10% had sufficient access to follow their studies permanently.

The equipment of the students allowed the flexibility made necessary by the Hybrid teaching. In addition, the choice of an iPad as equipment was considered a very good fit of equipment to follow the courses.

The implementation of this program has been carried out on 14 campuses and still presents logistical and implementation challenges of implementing equipment loans at this scale. Communication to raise awareness of this program is still an effort that needs to be renewed every year. On the 14 campuses, 29,000 iPads and 1,850 Internet access points have been loaned.

A major partnership with computer publishers has enabled the implementation of CSuccess for the software part of the equipment. This program plans, in the long term, to close the technology equity gap and improve student success.

The loan of equipment not only strengthens students' sense of belonging to their institution, but also their sense of future success, as they feel supported by their institution more than 90% of the time. 95% of students report that they are able to take notes and access digital resources, including those needed for their coursework.

Conclusion

The holistic student approach is now considered operational and has been shown to be effective in student success, both in retention and graduation. The analytics used to improve student success, based on the use of AI, now offer robust and well-established models.

Streamlining dropout remediation could be a bias brought about by these AI-based analyses. Indeed, as much as AI has demonstrated its relevance in the analysis of dropout and the first "nudges" before remediation, remediation is the responsibility of educational advisors. These advisors represent a significant cost for the school, but cannot be replaced by an application.

The solutions provided by major publishers indicate that the solution has reached a sufficient degree of maturity to allow such an implementation. They allow institutions to implement their institutional policies while guaranteeing an optimized student success rate.

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[91] CSUCCESS: Digital Equity and Student Belonging - Peter Mosinskis, Interim Chief Information Officer, California State University, Office of the Chancellor - Kate Miffitt, Director for Innovation, California State University, Office of the Chancellor - Mike Pronovost, Interim Director of Systemwide IT: Mobile & Shared Services, California State University, Fresno

The community also offers support to institutions that wish to engage in this massive data collection process for student success purposes. Two initiatives were presented, one offering advice and best practices to guide institutions towards the most appropriate choices for their initial situation and objectives. The other proposes solution bricks to put together in order to implement these solutions.

The pandemic has been a powerful accelerator in the field. By preventing students from being present on campus and causing them to drop out in greater numbers than before, mainly in the first year, the analyses focused on dropouts, but also on distance and Hybrid courses.

In addition, the distance-only courses highlighted a lack of computer equipment among disadvantaged students. Institutions that corrected this bias, at the cost of significant investments, demonstrated that the success rate of these students returned to the average of other students. They have also increased the sense of belonging among these students.

A stakeholder approach: creating new pedagogical devices with Student Centric approaches

Bertrand Mocquet

Introduction

Our discussion concerns the student-centric approach from the point of view of institutional strategy and how, in the post-covid digital transformation trajectory, pedagogical methods have emerged involving all stakeholders in the North American area. We previously covered the topic in 2018. Four years later we return to this same topic with a new focus and a notable development in university hi-tech: Covid.

The broad context

Our understanding of the situation of universities in the United States is built on the various conferences at the annual convention and testimonies heard during visits. Post-Covid, we can see a context where universities and colleges have been disorganized and reorganized, and where, simultaneously, there appears to be a demographic decline in the US in the age group entering higher education, leading to a risk of loss of future "customers". These two facts could provoke an increased competition between institutions that must strategically improve the quality of their digital and pedagogical services in order to maintain their turnover and, for some, to perpetuate their existence.

The collection method

The principle is to collect information and statements to support this part of the report. The data collection is done during live sessions in Denver or asynchronously, through the program agenda and finally in the reports available on the EDUCAUSE website.

The questioning process

The general question would no longer be how a student-centric approach perpetuates itself in Higher Education as in 2018 but rather how to spot this modality of constructing associated digital devices and services? We have thus set ourselves three observation hypotheses, which are the three parts of this article: 1/ A stakeholder approach 2/ The creation of student-centric devices to change the university 3/ The presence of students in the creation of devices

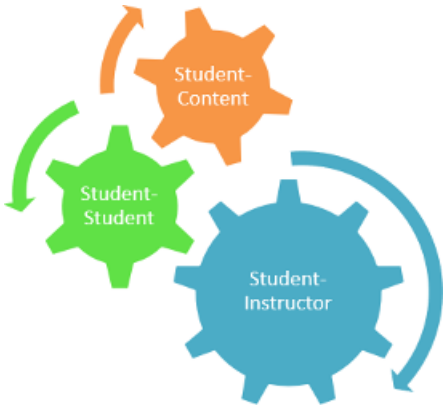
A stakeholder approach

Higher education stakeholders refer to individuals or groups who have a vested interest in the success of digital services at colleges and universities. These stakeholders may include students, faculty, staff, alumni, funders, administrators, government agencies, accrediting bodies, and local communities, among others. Each of these groups plays a unique and important role in the orientation and outcomes of higher education institutions.

Students are one of the most important stakeholders in higher education because they are the primary reason for the existence of colleges and universities, and their success and well-being are critical to the success of the institution. These students come from diverse cultures and may have different goals and needs, so it is important that institutions are sensitive to their needs and concerns. This may include providing support services such as tutoring, counseling and career guidance, as well as promoting a safe and inclusive campus environment, for students with disabilities.

An example of a student-centric approach in higher education can be found on the EDUCAUSE website in the form of an article entitled "*Student-Centered Remote Teaching: Lessons Learned from Online Education*"[92].

In this article, the author explains how a student-centric approach to teaching and learning involves focusing on the needs, interests, and learning preferences of individual students, rather than on the needs of the teacher or institution. This approach may involve integrating a variety of teaching methods and technologies to better meet the needs of different learners, as well as engaging students to co-create their own learning experiences.



One specific example of a student-centric approach mentioned in the article is the use of student-content plans, which are personalized learning plans developed by students in collaboration with their instructors (student-instructor).

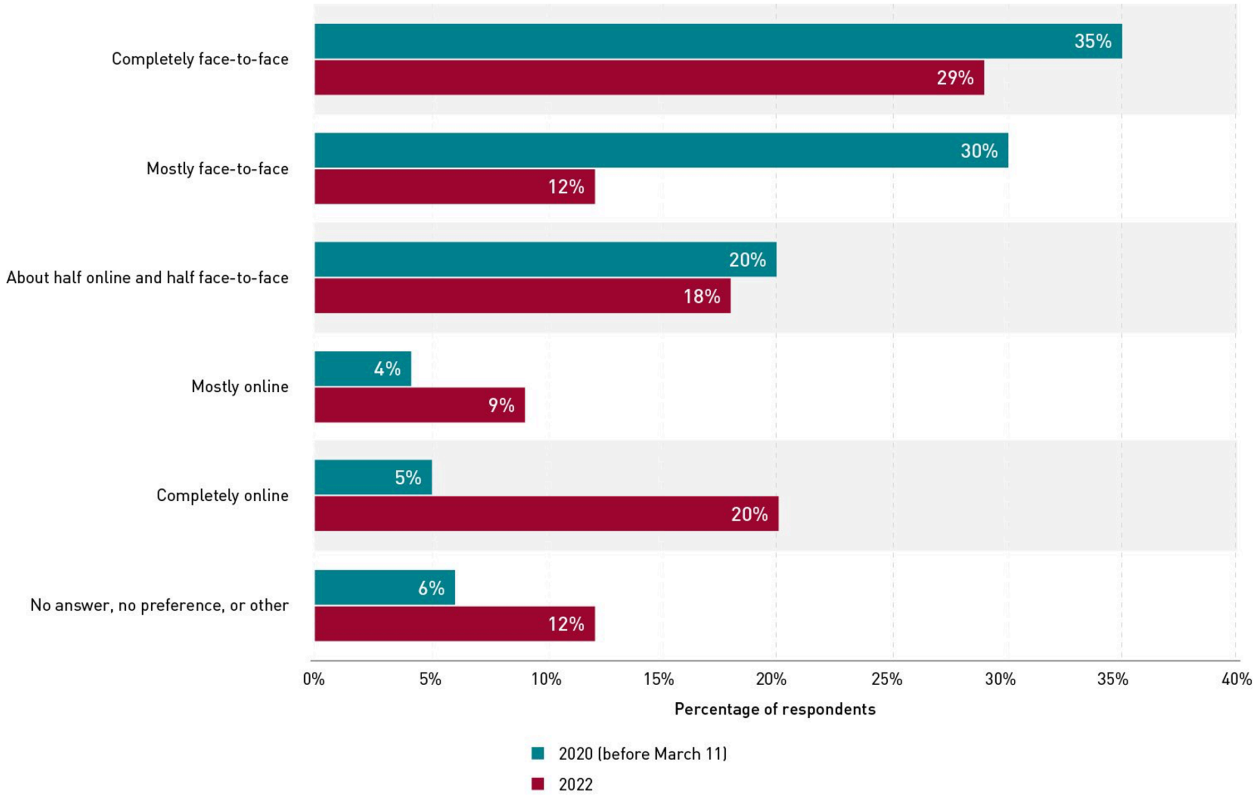
These plans allow students to set their own learning goals and monitor their progress, while providing opportunities for them to take ownership of their own learning. Other examples of student-centric approaches in higher education include the use of adaptive learning technologies. These provide personalized learning experiences based on the needs and abilities of individual students, as well as the use of student-led discussions (student-student or student-intructor) and other active learning strategies that encourage students to take an active role in their own learning (student-student).

[92] Student-Centered Remote Teaching: Lessons Learned from Online Education, Shannon Rings https://er.EDUCAUSE.edu/blogs/2020/4/student-centered-remote-teaching-lessons-learned-from-online-education

Creating student-centric devices to change the university

An observation of use to start the process

In order to know the students well, some universities rely on an existing annual study; an observation of the digital uses beyond its organization. This is « 2022 Students and Technology Report: Rebalancing the Student Experience[93] »: 41 questioning fields for 820 respondents. Among the expected elements, the place of the evolution of learning practices and teaching modalities before/after the pandemic. The share of students wishing to be taught completely online has increased fourfold without a significant decrease in other modalities. There would be no big decrease in face-to-face attendance (35% in 2020, 29% in 2022), but the fully online module seems to be more accepted (5% in 2020, 20% in 2022).



[93] 2022 Students and Technology Report: Rebalancing the Student Experience, Jenay Roberts . https://library.EDUCAUSE.edu/resources/2022/10/2022-students-and-technology-report-rebalancing-the-student-experience

Some typologies of student-centric approaches

1. Personalized Learning : this approach involves creating personalized learning experiences for each student based on his or her needs and learning preferences. This may involve the use of adaptive learning technologies, as well as other strategies such as personal learning plans and self-paced learning. In the US, this is a service to the student with possible coaching to customize their learning plan to fit their plan.
2. Active Learning: this approach involves engaging students in activities that encourage them to take an active role in their own learning, rather than simply receiving information from a teacher. Examples of active learning approaches include student-led discussions, problem-based learning, and collaborative projects.
3. Project-based Learning : this approach uses real-world projects or challenges as the basis for learning, rather than traditional lectures or readings. This allows students to apply their knowledge and skills to authentic problems and situations.
4. Student-led courses : this approach involves allowing students to take a lead role in designing and delivering their own courses, with guidance from instructors. This may involve students co-creating their own learning experiences and assessments, as well as presenting their learning to their peers, in a flipped classroom.

The presence of students in the creation of some devices: selected pieces in this #EDU22 edition

All the pedagogical devices presented below in a student-centric logic are (logically) carried out in co-design with students, in the form of at least a survey by questionnaire, at most by participative workshops.

A student-centric framework for measuring the value of credentials

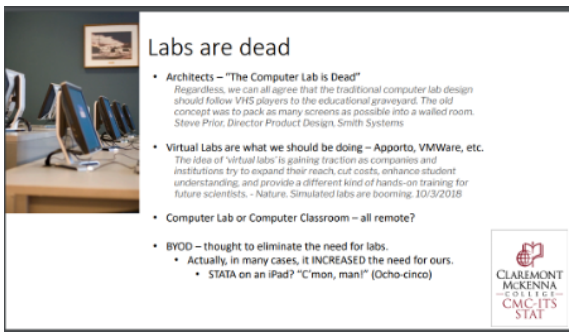
Sarah DeMark, Vice President, Workforce Intelligence & Credential Integrity, and Tyson Heath Director of Credential Integrity, Western Governors University presented a student-centric framework for measuring degree value at Western Governors University. The goal is to build the student's pathway with him or her by proposing several levels of validation: the competency badge, the certificate (3 competency blocks), the certification (3 competency blocks linked to the professional environment), the specialization (at least 6 competency blocks) and beyond to graduation (more than 10 competency blocks).

User Experience and Service Design Practice Community Group (CG)

Jon Hays, Manager, Communication & Collaboration Services, University of California, Berkeley provides a poster on a community of practice for user experience and digital service design around a design thinking approach where students are present in agile workshops.

New Purpose for Old Labs

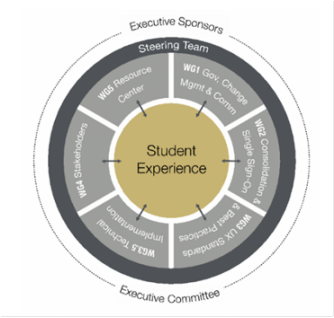
Mike Malsed, Assistant Director of Student Technology Services, Claremont McKenna College describes how students were partnered to co-create a space to work individually, but together. The ReBirth of computer labs with students. The result is a Lab and a lively user community.



Future-Ready Institutions Put Students at the Center of the Experience, But How?[94]

Douglas Little, Assistant Vice President, Georgetown University, testifies to the implementation of a CRM for students to better construct their educational plan. In this way, Georgetown enables meaningful lifelong engagement for all of their students and alumni, not only with each other but with faculty, advisors, staff - in short, with everyone they encountered at Georgetown on campus and long after graduation.

Project USE (Unified Student Experience) University Colorado Boulder



Note that in the 2018 report, we identified the student-centric approach implemented by the University of Colorado Boulder, which the Delegation visited this year (see the report in this 2022 Report) confirms it as a permanent system.

Conclusion

The necessary obligation to think about strategy in terms of the customer pushes the university organizations we observed to develop a student-centric approach in order to satisfy needs (and therefore the sale of training): this is an approach that we can describe as marketing. However, on our side of the Atlantic, we can take note of this type of approach and think about integrating student groups into our designs or redesigns of educational paths or new digital services for students. This is a new challenge for us in France.

[94] https://www.youtube.com/watch?v=vlX8jVLpF_o

Immersive Learning: XR Station, a demonstration dedicated space

Christian Cousquer, Thierry Koscielniak et Maité Sylla

This article is the seventh in a series started in 2016 in the Delegation's previous reports[95] :

- 2016 « Learning with Virtual Reality » - page 44 ;
- 2017 « Teaching with Virtual Reality » - page 46 ;
- 2018 « Immersive Learning : promises kept ? » - page 54 ;
- 2019 « Immersive Learning : massive feedbacks in 2019 » - page 68.
- 2020 (no English translation) « Immersive Learning : grand cru 2020 - Production réduite et d'excellente qualité » - page 105
- 2021 « Using immersive technologies to teach » - page 59

In 2020 and 2021, due to the health crisis, the French Delegation could not be physically present at the annual conference of the EDUCAUSE community. The year 2022 was an opportunity to meet face to face with colleagues involved in the pedagogical uses of immersive technologies.

We remind you that on the EDUCAUSE website, there is a page of synthesis documents to get you started in the discovery of immersive technologies and their pedagogical applications : ***eXtended Reality (XR)***[96].

The community working on XR is now well structured with the XR Community Group whose mailing list is very active; and also with the XR Community of Practice which is co-piloted by EDUCAUSE and HP. This second group meets once a month to discuss usage stories.

XR station

For the first time this year a space dedicated to virtual reality demonstrations was organized by EDUCAUSE and HP. The actors of the XR Community of Practice presented their achievements (calendar below).

Two panels with the results of a survey[97] conducted among EDUCAUSE members were deployed on the space. The striking figure is that 90% of the respondents expect an increase in the use of XR in the next five years.

The top three use cases are :

- Simulations for skills training
- On-campus course activities
- Distance Learning and HyFlex mode

It should be noted that the use of XR for student wellness and mental health is considered in this survey .

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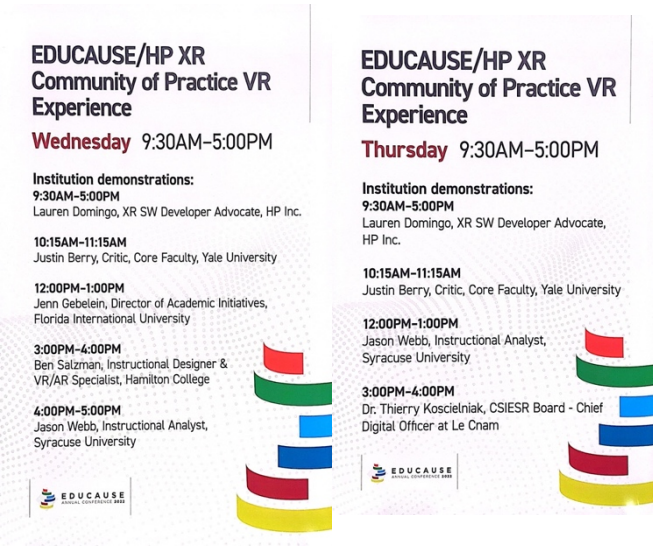
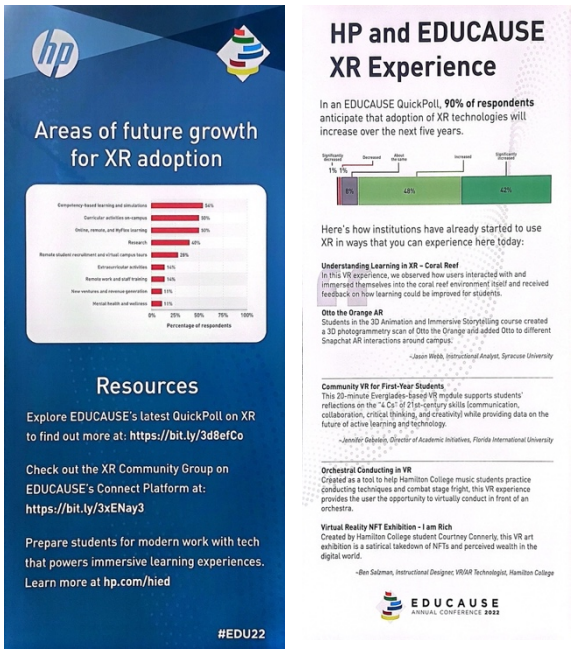
[95] http://tinyurl.com/delegation-Fr-EDUCAUSE

[96] https://library.EDUCAUSE.edu/topics/emerging-technologies/extended-reality-xr

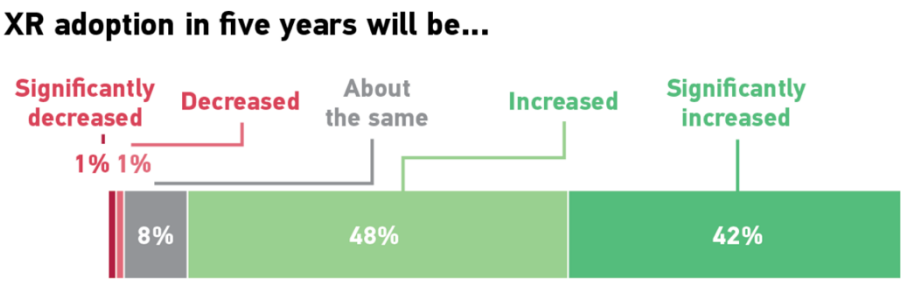
[97] https://er.EDUCAUSE.edu/articles/2021/12/EDUCAUSE-quickpoll-results-xr-technology

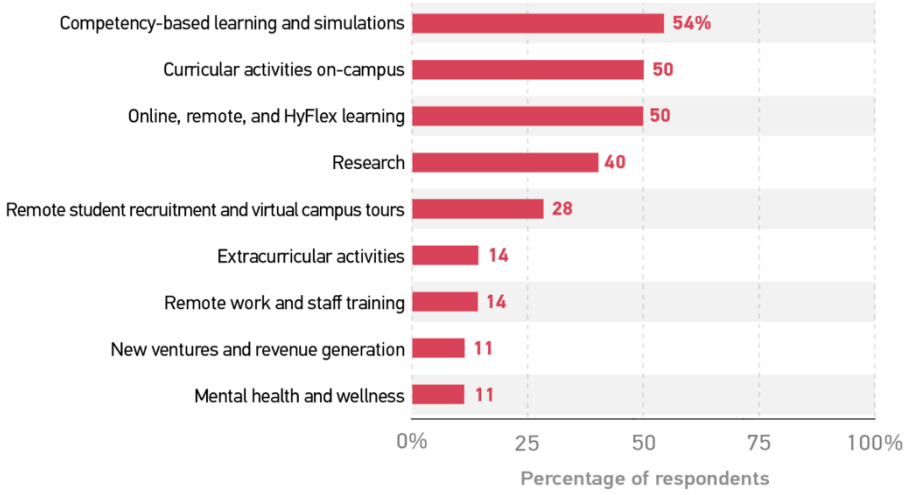


XR Station Presentation Schedule



Presentation of the XR survey within the XR station





Focus on the results of the survey presented within the XR Station

Two areas were visually materialized on the ground for the demonstrations. This is an important precaution because a person wearing a VR headset might make sharp movements. The people around should be careful to stay out of the area, except for the demonstrator when the virtual reality experience is started.

Demonstration on the XR Station of the digital twin of the Cnam chemistry laboratory
Photo credits : Christian Cousquer

XR Station Demos

Lauren Domingo – HP Inc :

Omnicept Reverb G2[98] headset demonstration: this headset contains sensors that measure biometric data in real time: eye movement, pupil dilation, heartbeat, facial expression. These data are used to define the notion of cognitive load[99] when an experience is lived in Virtual Reality.

The demonstration presented consisted in cooking pizzas by choosing the ingredients and doing the cooking. The actions had to be performed with increasing speed and difficulty. The cognitive load results allow us to determine at what point the user can no longer keep up with the game.

Justin Berry - Yale University[100]

Demonstration of The Verb Collective project[101]. The Verb Collective, an open-source toolkit for creating interactive experiences in Unity, available for free in the Unity Asset Store Justin Berry - Yale University.

« *We employed a strategy of reducing code into very basic commands, such as "to look." Each verb can be triggered by another verb or can be active on start, and each verb can act as a trigger for an array of other verbs. Our goal was to create a system inspired by the exploration of concrete experiences as a way to open the technology to users less interested in a specific outcome, such as a game, and more interested in exploring*

[98] https://unboundxr.eu/zakelijk/hp-omnicept-en-hp-reverb-g2-omnicept-edition

[99] https://developers.hp.com/omnicept/hp-omnicept-cognitive-load-database-hpo-cld-%E2%80%93-developing-multimodal-inference-engine-detecting-real-time-mental-workload-vr

[100] https://ccam.yale.edu/xr-teaching

[101] https://yalemaquette.com/The-Verb-Collective

the material properties of the worlds they create. In doing so, we hope to bring in a more diverse set of makers that challenge existing notions or expectations of these media » Justin Barry

Jennifer Gebeilen - Florida International University

Presentation of a simulation to create a dry shelter in the Everglades (video[102]).

This project allows first-year students to test their collaborative work skills. It is one of the few academic simulations that allows several people to interact in a virtual space.

Excerpt from the project presentation:

« *This virtual reality project is designed for the SLS 1501 course as an optinal part of the course curriculum for all first-year students to promote the four "Cs": communication, collaboration, critical thinking, and creativity. The four C's are essential to student success in academics, life, and a professional career. Integrating them into a safe virtual space is a new way of learning that will allow students to work together in a timed simulation to build a shelter in a virtual space.* »

All working documents are available online[103].

Ben Salzman – Hamilton College

Courtney Connerly, a student of Professor Salzman, presented her PhD thesis work[104]. It is a virtual tour of an art gallery. This work benefited greatly from her position as Digital Media Tutor while she was a student, accompanying faculty, students and administrative staff in the Research & Design Studio and the Digital Arts Lab.

Jason Webb – Universityy of Syracuse

Presentation of a high-definition underwater simulation made by an educational engineer from Syracuse University. The goal is to support teachers in creating stimulating and exciting educational content for students.

Thierry Koscielniak - Conservatoire national des arts et métiers

Demonstrations of the immersive twin of the Cnam chemistry laboratory operated by Christian Cousquer and Maité Sylla. Discovery of the laboratory and safety training (see poster below). This work has been financed by the Ile-de-France Region in 2020 and by the ANR in 2022 in the DEMO-ES JENII project - Jumeaux d'enseignement numériques immersifs et interactifs[105].

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[102] https://www.youtube.com/watch?v=9CF2Srugiq4

[103] https://drive.google.com/drive/folders/1oN6mzl8WTwc6Fm2Wn4vjspJ0sm5ymc1q

[104] https://www.hamilton.edu/news/story/nfts-crypto-metaverse-digital-computer-science-art

[105] https://www.linkedin.com/company/jenii/

Presentations at 2022 Conference

A Year-End Review from the EDUCAUSE/HP XR Community of Practice[106]

A roundtable discussion brought together XR Community of Practice actors: EDUCAUSE and HP representatives from the group's steering committee with testimonials from Columbia University, Hamilton College, The New School and the Conservatoire national des arts et métiers.

The experiments presented demonstrate the power of using XR to focus students on their subject of study and the immediate and long-lasting effect of induced memorization. The general observation is that educational activities using immersive technologies are currently experiments on modest scales. This is due to the low penetration rate of hardware dedicated to virtual reality in the daily use of teachers and students.

Feedbacks from Teaching and Learning with an Immersive Digital Twin of a Chemistry Lab[107]

The authors of the article presented a poster that reports on the progress of work at the Conservatoire Nationale des Arts et Métiers on immersive TP (CAP'VR project) and the ramp up of the JENII project: immersive and interactive digital teaching twins.

This post presents feedback from the teaching and use of a virtual reality (VR) digital twin of a Chemistry laboratory.

The following questions are addressed:

What were the drivers and motivations for development?

How and where to position these VR modules in an existing curriculum?

What are the benefits of VULCAN[108], an open-source platform of learning traces dedicated to VR for teaching?

Several articles about the project have been published on the Cnam website[109].

A review article with EDUCAUSE staff have been published on EDUCAUSE website « XR Success in Vocational Training: The Conservatoire National des Arts et Métiers »[110].

The poster in place during the conference - Photo credits : Christian Cousquer
The poster is available for download in high definition: https://direction-numerique.cnam.fr/medias/fichier/EDUCAUSE2022-poster-v3-s_1673407967055-pdf

[106] https://events.EDUCAUSE.edu/annual-conference/2022/agenda/a-year-end-review-from-the-EDUCAUSE-hp-xr-community-of-practice

[107] https://events.EDUCAUSE.edu/annual-conference/2022/agenda/feedbacks-from-teaching-and-learning-with-an-immersive-digital-twin-of-a-chemistry-lab

[108] https://www.mimbus.com/produit/vulcan/

[109] https://formation.cnam.fr/actualites-de-la-formation/realite-virtuelle-le-cnam-navigue-au-large-1374237.kjsp
https://formation.cnam.fr/actualites-de-la-formation/industries-chimiques-pharmaceutiques-et-agroalimentaires-des-cours-avec-de-nouveaux-modules-de-realite-virtuelle-1370547.kjsp
https://formation.cnam.fr/actualites-de-la-formation/quand-la-realite-virtuelle-s-invite-en-cours-de-chimie-1315427.kjsp
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https://formation.cnam.fr/actualites-de-la-formation/projet-4-cap-vr-chimie-agro-pharma-virtual-reality-1184246.kjsp

[110] https://er.EDUCAUSE.edu/articles/2022/5/xr-success-in-vocational-training-the-conservatoire-national-des-arts-et-metiers

Social-Emotional AR/VR Avatars for Safe-Space Conversations and Soft-Skill Training[111]

Clint Carlson, Director of EdTech Innovations in the Department of Psychiatry at the University of Colorado, presented simulation scenarios in health sciences. The objective is to assess soft skills through avatars that can simulate non-verbal communication[112].

The construction of a simulation involves the use of a mind map that allows to visualize all the branches imagined in the scenario.

The solution used is VTS-Editor which is marketed by a French company: Serious Factory. This serious game editing software allows to generate 3D scenes on screen but also in virtual reality in a headset.

Please note that the slide show of this presentation is available online[113].

This Is the Future! Cataloging the Successes of an AI-Assisted Virtual Reality Simulation[114]

Case study on using virtual reality for learning in the medical field.

In a poster session, two Montgomery County Community College staff members, Matt Kilbride, Instructional Technology Simulation Specialist, and Dana Smith, Assistant Professor of Radiography, presented a virtual reality (VR) radiography simulation for nursing/medical students in a medical training setting. This tool coupled with artificial intelligence (AI) is able to train students to perform a clinical analysis and prepare them to feel more comfortable in a clinical environment without additional danger. The developed tool can also evaluate student interactions and decisions. **(Image 1)**

Image 1: Students produce authentic radiographic images outside of clinical experiences without risk to the patient. (From the poster by Matt Kilbride and Dana Smith, Montgomery County Community College).

The authors presented this learning proposal developed in a radiography program in collaboration with Siemens Healthineers. The immersive simulation allows for virtual medical coaching that complements the skills learned in hospital rotations. The presenters also point out that this virtual reality environment offers first- and second-year students the opportunity to simulate and understand clinical radiography procedures, including patient interactions, machine operation and image analysis. This allows students to alternate between theory and "virtual practice" to develop their technical and clinical skills and ultimately improve the performance of healthcare facilities.

The user experience is also presented in the poster, in a comparison of students' final grades since using the immersive tool **(Image 2)**. The authors note that students found the virtual reality environment to be a perfect teaching device for moving from theory taught in traditional courses to clinical experiences. They preferred it for

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111 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/socialemotional-arvr-avatars-for-safespace-conversations-and-softskill-training

112 https://xr.cuanschutz.edu/echo/Avatar_Intro

113 https://files.abstractsonline.com/CTRL/2C/3/0E3/1CA/EAB/467/DB6/893/560/9B1/421/F7/a446_1.pdf

114 https://events.EDUCAUSE.edu/annual-conference/2022/agenda/this-is-the-future-cataloging-the-successes-of-an-aiassisted-virtual-reality-simulation

practicing difficult projections and image critique. The authors also note that student grades and individual skill scores have increased since the introduction of this virtual tutorial. Therefore, Montgomery County Community College continues to use this tool to supplement essential skills development. In addition, students have received personalized feedback on their decisions during higher-stakes screenings through a questionnaire taken before or after using the virtual tutorial.

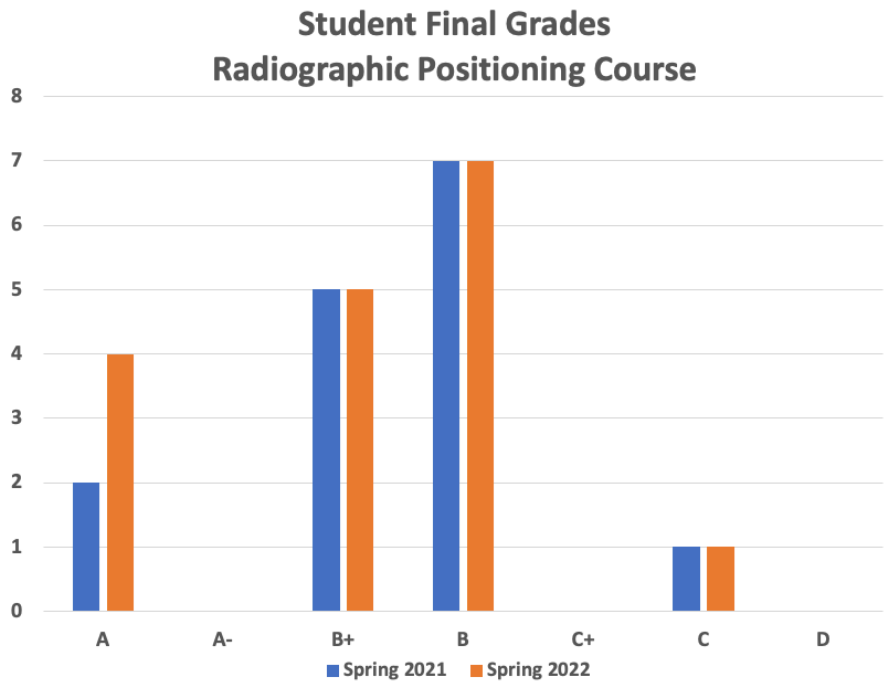


Image 2: Comparison of students' final grades in a radiography course between 2021 and 2022 (From poster by Matt Kilbride and Dana Smith, Montgomery County Community College)

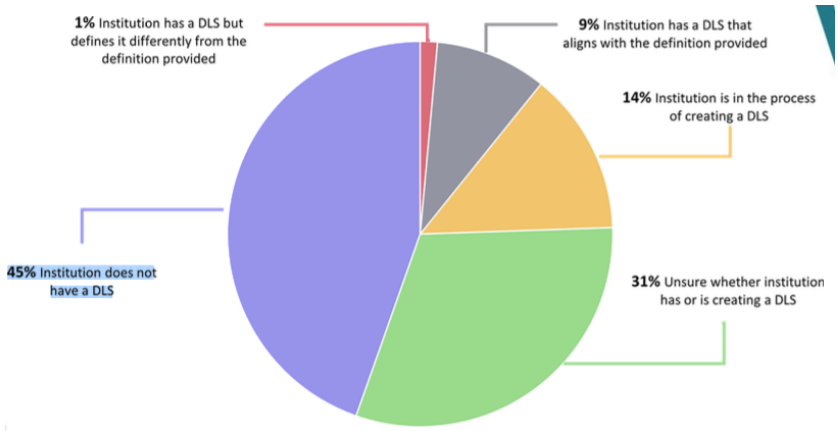
Some new Trends ?

Pascal Vuylsteker

Sometimes we see new promising terms emerge. Will they stand the test of time?

Digital Learning Strategy

In the session « Digital Learning Strategy: Current Practices and a Guide for the Future »[115] the session participants noted that everyone is involved in digital learning, but many have not necessarily taken the time to step back and reflect on a strategy. Within the DLS Working Group, a framework for building such strategies is being developed. Feel free to join the group or simply adopt their analysis toolkit.



EduMesh: Applying the Principles of Data Mesh to Education

In the world of Big Data, trends and architectures continue to search for their place. After the classic Data Warehouse and Data Lake[116], we saw the emergence last year of Data Lakehouses based on the Delta Lake tools. This year, the concept of Data Mesh has emerged, and its application to the field of education through EduMesh was presented in the session: « EduMesh: Applying the principles of Data Mesh to education »[117].

Before being a tool, Data Mesh is a methodology for reorganising the responsibilities of data distribution in a federated form. The focus is not on the technology, but on the philosophy of reorganisation.

Its inventor, Zhamak Dehghani, defines the concept as « A decentralized socio-technical approach in managing and accessing analytical data at scale»[118] and the four founding principles are as follows:

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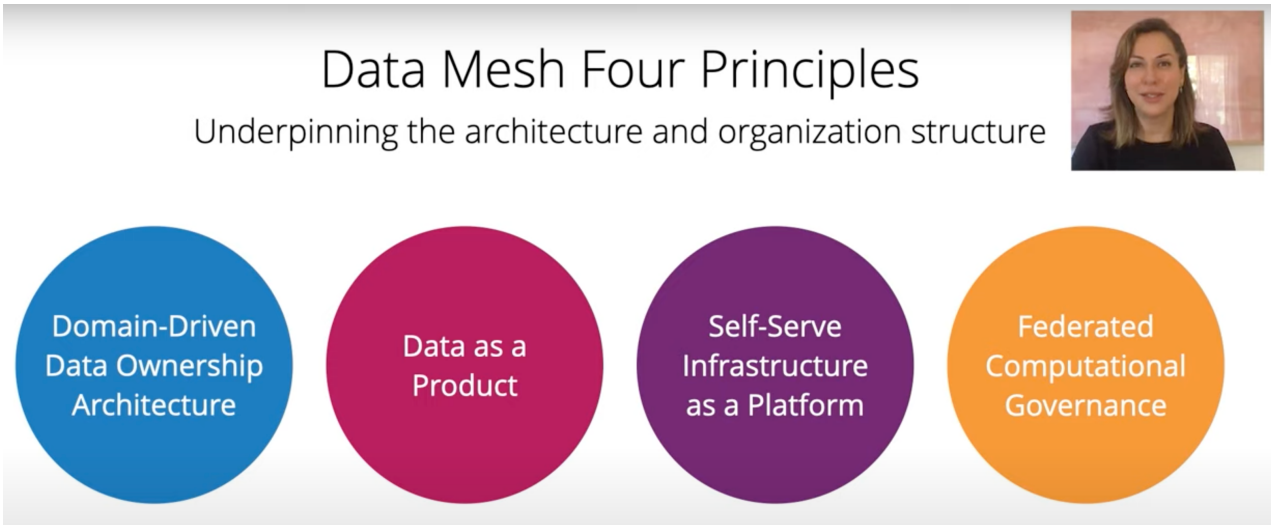
[115] Digital Learning Strategy: Current Practices and a Guide for the Future: https://events.EDUCAUSE.edu/annual-conference/2022/agenda/digital-learning-strategy-current-practices-and-a-guide-for-the-future

[116] See the 2021 French Delegation report: https://www.csiesr.eu/wp-content/uploads/2022/03/Rapport_EDUCAUSE_2021.pdf

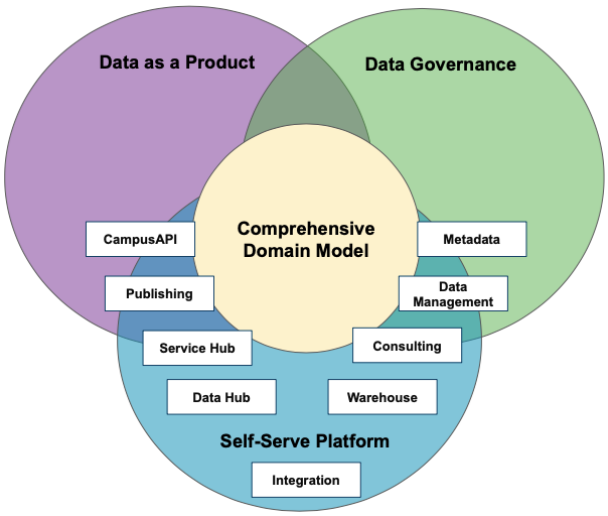
[117] EduMesh: Applying the principles of Data Mesh to education : https://events.EDUCAUSE.edu/annual-conference/2022/agenda/edumesh-applying-the-principles-of-data-mesh-to-education

[118] Introduction to Data Mesh - Zhamak Dehghani : https://www.youtube.com/watch?v=_bmYXWCxF_Q



The essence of this movement is, as in a swing back, to re-decentralise the responsibility of data emission within domains close to the data sources. Each domain is empowered for the approach by valuing data in the form of a Product. The coherence of the system is maintained by the provision of a common infrastructure as well as a federal governance of the project.

The choice and definition of domains are key in this approach. And some domains can benefit from an analysis that can be shared between entities organised in similar ways. Thus, the description of the Higher Education (HiEd) Domain can be reused in many universities. This is where the proposal from the DXtera Institute comes in: "The EduMesh platform combines an enterprise-scale self-service data platform, an enterprise data service solution, and data governance tools, all built on the comprehensive educational domain model of DXtera." Beyond the commercial pitch, it is interesting to consult the proposal of a set of definitions and an API aligned with the world of Higher Education on CampusAPI.ORG[119].



[119] CampusAPI.ORG : https://demo.dxtera.org/open/campus-api/

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Credits

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Editor in chief: John Augeri.
Layout: John Augeri

The EDUCAUSE French Delegation 2022 and John O'Brien, President and CEO of EDUCAUSE. On second rank from left to right Maité Sylla, Aurélien Saïdi, Sylvie Haouy, Bertrand Mocquet, Emmanuelle Vivier, John O'Brien, Christian Cousquer, Pascal Vuylsteker, Frédéric Habert and John Augeri. On first rank from left to right: Bruno Urbero, Laurent Flory and Thierry Koscielniak

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