



# REIMAGINING MINNESOTA STATE

## Forum on Reimagining Minnesota State Session 2: The Digital Age: The impact and future possibilities offered by data and technology

### Session 2 Summary

---

#### Overview

*Session 2: The Digital Age: The impact and future possibilities offered by data and technology* will explore the impact data and technology are having on the future of higher education. Presenters will share how emerging technologies, data analytics, and artificial intelligence are reshaping learning, student support, and operations and changing expectations for delivery among students and employers. Session 2 will explore the ways the higher education industry is reacting, adapting, and thriving through technology-driven innovation in a rapidly changing environment.

#### Guiding Question:

*How might Minnesota State reimagine educational and service delivery through strategic innovation in the areas of technology and data analytics to support student success, enhance student learning, expand access to programs and credentials, and reduce costs?*

#### Forum Participation

Approximately 90 people joined Session 2 live at St. Cloud State University and about 160 people joined via technology.

---

#### Briefing Paper Summary

Data and technology are seen as the great disruptor of industries across the world, and higher education is no exception. Technology and data have the potential to impact an institution's administrative and academic functions and transform the experience of students and employees. But while educational and technology leaders are lauding the potential of technology to transform quality, affordability and access, they also remind us that technology is not a panacea to the challenges facing higher education and that any discussions of changing practices as a result of technology should not be viewed simply through the lens of cost-cutting but through the lens of student success. Since education and human development and capacity building are processes of human interaction, the most successful technology implementations will be driven by an understanding of how technology can enhance those interactions and not replace them. This will require a better understanding of the learning and support needs of different student segments, more clearly defined outcomes and competencies to be achieved, and an understanding of the changing nature of professional roles across the academy.

There is a growing consensus that technology has the opportunity to impact higher education and its learners along four major themes.

- **Technology as a method to provide greater access.** Learners are no longer limited by time or place as a determinant of what educational options are available to them. A significant concern is that access to technology and high-speed Internet is not equally distributed. Ensuring equity will require a consideration of how to deliver and provide equal access to those students who already are disadvantaged. Emerging research points to the role of connections and engagement as an important element that drives student success. Done incorrectly, as a means to drive efficiencies and cost reductions alone, technology can create and reinforce a sense of isolation and disconnect and lower the quality of the educational experience.
- **Technology as a way to enhance and personalize learning and support.** In the academic experience of the future, adaptive learning technologies will provide personalized content based on the level of the student and allow them to move quickly through content they already know. There is limited research on the positive impact of classroom technologies on learning, especially in the foundational dimensions of higher education – critical thinking, creative problem-solving and human interaction. There also is widespread concern that not all students benefit equally, and some are negatively impacted, by online instruction.
- **Technology as a mechanism to support effective teaching.** Technology-supported learning creates rich information for faculty to continuously improve their teaching practices by understanding in real-time how and what students are learning, to empower students to be agents of their own learning, and to identify students who are struggling so they can be directed to academic and non-academic interventions and supports. There is emerging consensus that the optimal instructional model in the future is one that blends the traditional and the technological and that advanced technologies such as artificial intelligence, machine learning, and automation, should be used, not as a replacement for but to complement, enable and improve teacher-student interactions. The human connection remains critical with well-designed technology as the enabler for that connection.
- **Technology as a way to connect a lifetime of learning.** Increasingly, students will accumulate learning experiences at different times and through different institutions and organizations. As lifetime learning becomes a necessity for ongoing career success, individuals will need to be able to capture and communicate their learning and credentials in a unified way.

Beyond how technology is disrupting higher education institutions and practices, data and technology are becoming vital skills and competencies for success in the workplace and society. The importance of digital literacy as an educational outcome at all levels of education (primary, secondary and post-secondary) is being discussed. Increasingly institutions are being asked to develop students' digital citizenship, promoting responsible and appropriate use of technology, as well as their capacities to understand the digital environment and create content in this domain. Central to the promise of technology to enhance student success and support student learning is the fact that all aspects of the learning environment must be equally accessible and usable for all learners and instructors. But access to technology and high-speed internet is not equal.

Within the discussions of the technology in higher education, three emerging areas are being discussed and debated.

- **Artificial Intelligence:** Currently in higher education, AI is being explored as a means to complete routine, time-consuming tasks so instructors can spend more time on facilitating and integrating high-quality learning experiences for their students or for automating some aspects of student support to provide real-time, personalized responses.
- **Data Analytics and Analytics Technologies:** Institutions are pursuing strategies to leverage data to inform institutional decision making and to provide insights into student learning and

support. Institutions are developing data asset management strategies that purposefully leverage data acquisition and management as a strategic priority.

- **Immersive learning:** Immersive learning is already being used in fields such as nursing, medical science education, engineering, the sciences, and digital humanities to create real-life learning experiences for students. As the costs of technologies continues to fall, opportunities for use within a diversity of academic fields and disciplines is growing.

Adopting emerging technologies into ongoing operations will require significant investment in both development, implementation, on-going maintenance, and professional development of employees to ensure they are well prepared to integrate technology-enabled learning and support systems into existing professional practice. Institutions will need to balance investments in technology with other demands for key investments.

---

## Forum Session 2: Speaker Key Points

### *John O'Brien, President and CEO of EDUCAUSE*

The movement from analog to digital transformation has accelerated the pace of change within colleges and universities. Technology has miniaturized the devices we use but more importantly it has fundamentally changed the industries that have been impacted by this miniaturization, such as journalism, music, camera and film, content development, and communication. What is relevant to the discussion of the potential impact of technology on higher education is to think about how those industries have and have not responded.

We should think about technology and the opportunities it provides and not as a hammer that is forcing the industry to change. What opportunities are available to drive innovation to reimagine higher education: Student success, access, student-centered education, efficiencies and promoting financial sustainability, problem-based learning, games and simulation, and enhancing the student experience to name a few. In general, technology is believed to drive innovation in three ways:

- It allows us to do what we have been doing but better.
- It allows us to do what we have been doing but less expensively.
- It allows us to reinvent what we do.

What is digital transformation? Digital transformation (Dx) is a cultural, workforce, and technological shift. It is being driven by technology trends and changes that include advances in analytics, artificial intelligence, the cloud, mobile, consumerization, social networks, and storage capacities. Those drivers are enabling a new approach to everything from digital architectures to how campus leaders interact with the IT organization, all with the expected outcomes of new business models, improved student outcomes, different teaching and learning methods, and new research capabilities. Digital transformation means moving from ad hoc innovation to system-wide innovation and thinking of innovation at scale.

Technology provides opportunities to improve the student and experience and meet changing student expectations. According to a recent EDUCAUSE survey of students:

- 46% say they get more actively involved in courses that use technology
- 78% agree that the use of technology contributes to the successful completion of courses
- 79% say technology helps them ask instructors questions
- 71% say technology helps them engage in the learning process
- 69% say technology helps them work with other students on class projects
- 65% say technology helps them participate in group activities
- 82% of students want a blended learning environment (only 10% want all or nothing)

- 60% of students want early alerts, lecture capture, and free, web-based supplemental content

Students also want personalization and technology-enabled advising to assist them learn and navigate our complex institutions. At least 8 in 10 students are interested in:

- Personalized support and information on degree progress (92%)
- Personalized dashboards that give you real-time feedback about your progress (89%)
- Suggestions for how to improve performance (88%)
- Personalized quizzes or practice questions (88%)
- Real-time feedback for your instructor about your performance or progress (88%)
- Guidance about courses you might consider taking (87%)
- Alerts if it appears your progress in a course is declining (86%)
- Suggestions about new or different academic resources (84%)
- Feedback about performance compared to that of other students (82%)

EDUCAUSE regularly tracks proven and emerging trends in higher education technology. Under the proven category is:

- *Active Learning Spaces*: Using technology to make the classroom itself more engaging
- *Open Educational Resources/E-textbooks*: The textbook is undergoing a remarkable change. They no longer need to be texts, and they no longer have to be books: 48% of students wish faculty would use more e-texts; 65% of students sometimes don't buy books for their classes because they can't afford them; 23% often don't buy books for the same reason.
- *Data Analytics*: The next 10 years will be all about the strategic application of data and its impact on business strategy and the support and empowerment of students. Our ability to serve students is increasingly dependent on our ability to gather, integrate, and use data effectively. Our biggest challenge is not collecting data but integrating and using it.
- *Technology-enabled Advising*: These are complicated systems and are not just technology deployments. In addition to the positive impact technology-enabled advising can have on student success outcomes, it also has positive financial implications. On average, institutions see \$1 million in additional revenue because of increased retention.
- *Adaptive learning*: This involves software tools that adjust with the student. It allows some students to focus on foundational concepts and others to engage in more advanced content based on their needs. Initial results are promising. Through the implementation of adaptive learning technologies, at Carnegie Mellon students completed courses 50% faster. California State-Northridge experienced a change in math pass rates from 45% to 75%. Arizona State University saw course withdrawals drop by nearly 50%.
- *Gaming*: There is significant evidence that gaming supports learning. A well-designed game improves learning over lecture by between 7% and 40%. Learners in game-based instruction performed as much as one full letter grade better when compared to learners in non-game-based instruction. A review of 60,000 articles found significant positive effects of gaming on outcomes in science, math, and literacy.

Under the emerging technology category is:

- *Augmented and Virtual Reality*: Most agree that the widespread adoption of virtual reality is more than 5 years off, but the possibilities for simulated learning environments are remarkable. By 2023, it is anticipated that 40% of colleges and universities will be deploying augmented and virtual reality in learning.
- *Artificial Intelligence*: Currently, 42% of consumers are already using digital assistants, while 53% of millennials are using them. Institutions are just beginning to explore the possibilities of AI, including chatbots and AI teaching assistants. Some are providing basic information services,

such as Saint Louis University, where students are provided Echoes to provide answers to routine questions about the university and student services.

*“Don’t jump too soon but don’t not jump” – John O’Brien*

**Tiffany Mfume, Asst. Vice President for Student Success and Retention at Morgan State University**

Why does student success matter? We have a moral obligation to equip students to have a successful life and career. We are facing global competition, and we need to keep our competitive edge. College loan debt and loan default rates are troubling and the number one way to default is to not finish the degree. Calls for accountability and reporting are growing and state and federal legislators are counting on us to have transparency in the work we do. Performance based funding is being tied to persistence and completion rates. The brand and reputation of the institution are tied to the success of its students and degree completion.

We also know there are socio-economic differences in baccalaureate completion. While we are making progress as a country on baccalaureate completion, we’re not making gains at the same pace across different bands of household income. Since 1970, we’ve seen an increase of 42 percentage points in baccalaureate degree completion by individuals in the top income quartile (82.4% in 2012), while those in the bottom and second quartiles complete at much lower rates (8.3% and 16.5% respectively) and show very little improvement overtime (2.1 points and 5.6 points respectively).

We know that completing a college education has long-term positive effects including higher lifetime earnings. From a recent study by the Lumina Foundation: incidence of poverty is 3.5 times lower; likelihood of having health insurance through employment is 47 percent higher; likelihood of having a retirement plan through employment is 72 percent greater; probability of being employed is 24 percent higher; likelihood of reporting health to be very good or excellent is 44 percent higher; incidence of obesity and heavy drinking are significantly lower; likelihood of exercising, having a healthy diet, wearing seat belts and seeking preventative medical care are significantly higher; probability of being in prison or jail is 4.9 times lower; probability of being married is 21 percent higher and the probability of being divorced or separated is 61 percent lower.

*Morgan State University Case Study:* Morgan State has created a technology-enabled case management approach to support student persistence and completion. Through this effort, they experienced an 11 point gain in retention and graduation rates. Through the case management approach, staff members act more like social workers to provide personalized support and responses to their students. They have developed mini-grants to support students who have stopped out as a way to encourage them to come back and complete. Through their research of National Student Clearinghouse Data, they discovered that many of the MSU students who left were in good academic standing and were not enrolled anywhere else. Through their Office of Student Success and Retention (OSSR) they are focusing on advising and degree planning, faculty develop and course redesign, and financial strategies to support student completion.

*Lessons learned from their technology deployments to support student success.* MSU used multiple technologies to support their student success strategies. They found that one-size-fits-all tools did not align with their culture and needs. They chose to select and implement technologies specific to their needs, which resulted in using different tools for specific purposes. MSU chose not to pilot but to roll out the technologies across the institution as an intentional way to break up organizational silos. They began with a limited ask of faculty – to provide information on students at two points in the semester. Professional advisors used that information to reach out to students and the faculty member received a notification when the issue was addressed. The technology itself was not the important part, but the

technology enabled faculty to more easily provide feedback to the student. It's the facilitator of faculty engagement. Comprehensive training was also key to their implementation. They found that faculty had questions beyond the technology, including about the catalog, policies, resources, etc. This spurred them to develop an Academic Advising curriculum for faculty and staff.

***Dr. Peter Smith, Orkand Endowed Chair and Professor of Innovative Practices in Higher Education at University of Maryland University College***

Currently, three-fourths of students in post-secondary education are adult, non-traditional students. Non-traditional students face a different set of challenges to participating in higher education and completing a degree. Many are in good academic standing and still leave. Many are battling real insecurities, including financial, housing and food. This is both a national security and social justice issue. Public higher education are at the checks and balances of a civil society. The country needs our public higher education institutions to be stable and viable and available to serve these students.

Learning occurs everywhere and most of it is not in colleges and universities. We all learn throughout our lives and more often than not, it happens outside of formal education. The average person in this and other developed countries spends about 700 hours every year learning something purposeful and objective with a beginning and end. That equals about 14 hours per week in which people are learning something. It is not always formal, often it is not, but they are learning things that help them become successful. But most of this learning is not recognized. Every learner deserves recognition and the respect that comes from who they are, what they've done, and the learning they've acquired.

Higher education institutions and systems are not particularly good at recognizing this type of learning. How do we recognize forms of cultural learning, for example people with indigenous backgrounds. How do we assign 'credit' and value that help them save time and money in completing their degree, and clarify the base that they are building on? This would require a type of gap analysis in order to understand what the student already knows and how much more there is for them to learn, so we are not asking them to relearn something they already know.

This is knowledge discrimination. We tend to value what people know based on where they learned it, and that generally means from traditional institutions in traditional ways. We value where students learned something more than what they know and what they can do with it. We need to deal with the totality of the people coming to us now. We have talent and capacity walking around this country that goes unrecognized. We can begin by respecting the lives and experiences they have when they walk through our doors.

The good news is that the student believes local is going to be better, as long as it is done well. People will want to affiliate with something that is known to them if they have that choice. In the future there will be more low-residency and different participation patterns and very different relationship patterns with employers. The workplace will become a location of learning for colleges.

Learning is a social activity. There is a reason fewer than 10% want it all one way. The reason that MOOCs have success of less than 8% completion rates is because people do not want to learn that way. There are tools and then there are people. Whatever you imagine and do has to have people at the heart at it. There are a lot of different arrangements. What's going to work for Minnesota State, but also the personalization at 37 different campuses? The only mistake you can make is to stand still. It is not good for our students, the state, or the country.

## Panel Discussion

### *How do you engage mid-career faculty with the digital age?*

The reality is that higher education will require all kinds of faculty with different teaching and learning approaches. Technology pioneers are important, but not everyone has to be a pioneer. Faculty do need to keep up with the basics of serving students and also be open to trying new things. Training is very important.

### *What separates those colleges and universities that talk about it and those that actually innovate?*

The most important element is a clear mission, and the ability to take the mission and humanize it in ways that are forward looking. Assessment is an important pedagogy of learning if we do it right. Create opportunities to try things out in smaller groups and pilots. Implement A/B testing to understand effectiveness. Make time for innovation, and do not ask those people that are already working 40 hours a week to invent the future while they are doing everything else. Look at the work that universities have already done – those institutions that look like you – and learn from it. Technology is no longer a utility but a strategic asset. Technology leaders need to be part of shaping new directions for the institution. Fear is a bad motivator. Change through push doesn't get the same results. Empower people to make the right choices.

### *What do we know about retention in online learning – what students know and can do a year later?*

What we do know about learning is that when you apply something you remember it. Delivery mode (online versus face-to-face) is immaterial because you can engage in good teaching practice regardless of delivery mode. Application and reflection on what you're learning is key. What happened and what did we learn? Its incidental in much of formal education and doesn't have to be. As we begin to capture more and more data points through these systems, we have the potential of understanding the process of student learning in ways that we have not been able to in the past.

### *How are alerts and reminders preparing students to be responsible?*

The workplace has already adopted reminders and alerts. Google reminds you of the meeting and sends you the agenda. These nudges and reminders are already widely used across the workplace. We just have not adopted them as readily in higher education. Going to college and learning is hard enough. The question is "how do we help our students." I've heard this said more bluntly – "students have a right to fail, and we should not have to hand hold students." To that I say, are we proud of our success rates now? Are we proud of the completion rate or the achievement opportunity gap in Minnesota? If we are then OK. If we're not proud than we need to do everything we possibly can to support them in their success.

### *How have you involved faculty in Morgan state student success initiatives?*

MSU had a 100% faculty advising model. We now have a first-year professional advising model, with 20 professional advisors for 1200 to 1500 students. Holds and alternative pins work when you have people who are available and accountable and still make it a student friendly experience. When they transition to a faculty advisor, all of the notes and how the students were advised in the first year move with them. To that point that, faculty are asking "why can't we use what the professional advisors are using?" That's why we created training. Faculty can use it, but it is not mandated. We've involved faculty in being able to give feedback on all of these tools. We collect their feedback and make changes based on their feedback. We've made it easier and incorporate their feedback.

### *How should we look at vendors and involve faculty in selecting vendors?*

Know your own data, your own profile, your own needs, etc. before you work with a vendor. They are in the business of sales and profitability, and they will want you to use them in a specific way. Engage them like a doctor. Get a second opinion. Look at different options. You need to have your IT professionals

and security at the table. What's in the cloud? Can it be integrated? The right people need to be involved. Also involve those who will use the tool. Once you've chosen a vendor, IT is involved but two groups that are lesser involved are faculty and students. These two groups should be highly involved. It goes beyond purchasing but ongoing implementation.

#### *How do we balance the benefits with the expense?*

If you can serve more students successfully, you will have more revenue. If you can reduce workload in some areas using technology, you can repurpose those people to higher priority activities or higher order pedagogical activities. Some institutions have created separate entities that report to the same president or chancellor that have a separate price structure, cost structure and set of assumptions. It could be a distance blended learning model, at the worksite at a major employer, a low residency program on the weekends where they are focused on content online but spend time on application with the faculty member. If you keep the cost structure of the campus as it is, technology adds to your expense. If you use it as a tool to reduce attrition, increase completion, or grow the student body because you've created a different participation model, you are adding revenue.

---

### **Forum Advisory Group Discussion:**

How does the system define success? What is its North Star?

- Student success (retention, graduation, employment). How do we make this a place where all can be successful?
- Affordability and access. Reducing student debt. Minnesota is 9<sup>th</sup> in the country for student debt. Reimagining Minnesota State will need to address this issue.
- Workforce alignment: 123,000 vacant jobs in Minnesota
- Closing the equity gap, currently near 15%
- Prosperous communities: Minnesota State as an economic base for communities to support their quality of life. It's about students but it also is about jobs and communities
- Financial sustainability: Financial stress test – some institutions are not doing so well
- Create a better, more globally fluent workforce. Minnesota State provides a dramatically more diverse experience than students will get anywhere else.
- Relevant student success
  - The quest to remain relevant would allow us to continuously pursue improvement
  - Outcomes-based
  - Recasting and redefining what student success means and what it includes
  - Acceleration of learning through working- work-based credit
  - Support for family – economic ROI for multiple generations
  - Allows for micro-degrees and certifications.
  - Infusing equity and inclusion throughout each of these

Possible areas to be addressed:

- Technology – consolidated and distributed
- Personal engagement of the student – engaging every student with tools and techniques that help them be successful
- Centers of focus -- content or expertise or with geographic convergence
- Student navigation. Are we going to allow for students to wander around and take courses?
- Are there incentives or can there be incentives? Measure incentives that are an investment for additional revenue.
- Issue of scale. This is about a system. Where do we take advantage of scale and where do we need to be local.
- Minnesota State – is really much more the land grant institution.



- Healthcare – demand-based model – population modeling
  - How do you build/manage capacity to respond to the anticipated demand?
  - What is the threshold that must exist for an institution to be successful?
- Understanding of the ROI on technology investments. It is not just the initial investment or upfront costs but ongoing implementation and maintenance. It also should include the resources that are saved and the improvement in metrics that occur as a result.
- How is the system governed? Should we be looking at other types of configurations?

Perspectives on change management:

- Conduct focus group with students – get them to respond to different ideas and language
- Involvement of faculty and staff in change management with purpose
- In a world of constrained resources, plan like resources are limitless
- In any organization, 1/3 are with you; 1/3 are on the fence; and 1/3 are against you. Focus energy on those that are with you. Fund them. Reward them. Support them.
- Develop a culture that expects to be continually innovating. There is no end game. People can't think this is a onetime change and then we will be back to status quo.
- What are my levers to drive change?
  - Setting a true north star for Minnesota State
  - Technology strategy should follow that goal
  - Strong leadership at all levels
- Directions:
  - Knowledge + technology
  - Leadership + Courage
  - Best practices + scale
- *System "skunkworks"* - skunkworks is important when you need to remove yourself from your constraints – subconsciously or not. Our competitors aren't limited to those constraints. It starts with mission and goals and freedom and opportunity to unleash creativity. Skunkworks alone doesn't work. The system needs to do a power analysis about what is holding back the system from changing. Systems are self-perpetuating through power dynamics.

---

## Minnesota State Community Comments and Observations

*How are the factors/issues outlined in Session 2 Briefing Paper and presentations impacting your organization/institution now and how might they impact them in the future? How has your organization/institution balanced investment in technology with increasing demands for other key investments?*

- Networking across the system: reduce cost, share efficiencies, increase continuity
- We need to be part of a network to vet possible vendors but also need to be able to have scaling that can be customized to each institution's needs (2-yr v 4-yr)
- Balance consistency versus individual campus needs
- Use EDUCAUSE membership
- Better representations on MnState committees and align campus communication
- Scale would be a challenge but also would allow more voices to be heard
- Decision-making is often separated and disconnected from key stakeholders
- Are our success markers the right ones (in context of gap)?
- What does success look like? How is that shared?
- Examining budget models – like responsibility-based – allows us to celebrate success
- Trust can cut away red tape
- Be intentional with planning

*What are strategies or promising innovations you are pursuing to respond to these types of disruptions?  
How do you address issues of equity and inclusion within the execution of these and future strategies?*

- How do we identify barriers to costs? Grants are short-term and outcomes driven.
- We should engage students across development
- Increase shark tank opportunities
- It's ok to take risks
- Does the system have the ability to measure ourselves against what we heard in this presentation?
- Caution – technology is not “the answer”

*In order to address these disruptions, how might Minnesota State encourage, support, and enable greater innovation and entrepreneurial activities without losing its responsibility for advocacy and accountability?*

- Consider student success holistically and inclusively
- Engage faculty and students
- Strategic planning for IT initiatives fully integrated with campuses
- Review budgeting processes for supporting technology

*Other observations?*

- Address statewide opportunity gap
- Support for students of color – engage and reward their strengths and perspectives
- System conversation about credit for prior learning – consistency in opportunity to recognize newer/non-traditional learning
- We are not the only ones with challenges.
- We don't have forums for discussion with faculty that would allow for deep change. Labor contracts don't allow flexibility for change.
- Is labor relations engaged in understanding how contracts need to change?
- Enrollment issues are helping to create a sense of urgency
- Open learning – we are all in this together
- Technology assisted advising
- We might be moving too slow with NextGen – this will change current policies and practices (i.e. CRMs)
- How do all of the current initiatives fit into the next steps? How do they come together?
- The potential of different technologies to impact retention – the importance of trying and evaluating the effectiveness of technological applications (note: a modern ERP is key to implementing this strategy).
- College-going behavior is changing dramatically (who goes; where they start; what their goals are)