REIMAGINING MINNESOTA STATE

About Minnesota State

Minnesota State is an interdependent network of 37 vibrant colleges and universities committed to collectively nurturing and enhancing a civically engaged, socially mobile, and economically productive Minnesota. As a system, we foster the success of all students, no matter where they are enrolled, and we support the vitality of all Minnesota communities, no matter where they are located. With seven universities and 30 technical and community colleges on 54 campuses throughout the state, Minnesota State is the largest single provider of higher education in Minnesota, and the fourth largest system of higher education in the country. Six out of ten undergraduates in the state are Minnesota State students.

We are deeply committed to being a place of hope and opportunity for students who dream of becoming our state's next generation of professionals and leaders – no matter who they are or where they come from. This is critically important for students from communities traditionally underserved by higher education, including the 22 percent of our students who come from families of limited financial resources; 17 percent who are students of color and American Indian students; 13 percent who are first-generation students; and three percent who are veterans and service members. Minnesota State serves more students from these communities than all other higher education options in Minnesota combined.

Our campuses play an essential role in growing the state's economy through talent development. Every year, the system enrolls roughly 375,000 students every year – 120,000 of whom are in non-credit courses and customized training programs designed for businesses – and awards over 38,000 degrees, certificates, and diplomas. Eight out of ten graduates get jobs in fields related to their programs and stay in Minnesota.

Reimagining Minnesota State: Three Big Questions

Through the *Forum on Reimagining Minnesota State*, we will learn together and respond to the three big questions presented by the Chair of the Minnesota State Board of Trustees that will inform the future of the system.

What is Minnesota State's unique value proposition to the State of Minnesota? What are the key educational, economic, and social goals that Minnesota State must address to create a better way of life for all people of Minnesota?

How does Minnesota State foster a culture of innovation, collaboration, and partnership as we share responsibility for the achievement of our key goals? How do we empower our employees and

students to experiment with and collaborate on innovative approaches to move the needle on our key goals?

How do we leverage our "systemness" to the benefit of our students and the state? What is the unique role of our public higher education system that makes the system more than the sum of our parts? How does Minnesota State act more like an interdependent network that fosters the success of all students no matter where they are enrolled and supports the vitality of all Minnesota communities no matter where they are located? How will we offer a diversity educational delivery methods and continue to attract and serve a more diverse student population.

Forum on Reimagining Minnesota State
Session 3: The Nature of Work
Briefing Paper 3

By Dr. Lisa H. Foss, Chancellor's Fellow

Forum Description:

Session 3: The Nature of Work will take a look at the changing nature of work and the workforce of the future as the realities and opportunities of technology, automation, and globalization impact different industries and professions. Session 3 will provide opportunities to discuss how organizations are approaching innovation and capacity building among their workforce in order to meet these changing skills and expectations.

Forum Session 3 Discussion Questions:

1. What are strategies or promising innovations you are pursuing to respond to these types of disruptions outlined in the Session 3 Briefing Paper and presentations? How do you address issues of equity and inclusion within the execution of these and future strategies?

2. What opportunities do you see for Minnesota State reimagine program development and the creation of educational credentials that are more responsive to changing workforce dynamics and demands in order to position our students for immediate and ongoing career success?

3. What are opportunities for Minnesota State institutions and other organizations to partner and collaborate in order to more successfully address these forces or pursue future strategies?

4. How will we reimagine our approach to employee development that prepares and supports them as they navigate this new landscape of learning?

5. 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?

The Impact of AI and Automation on Work and Careers

The world of work is changing rapidly and most agree the rate of change will only accelerate. Artificial intelligence and automation are creating what is being called the Fourth Industrial Revolution or the Digital Age. The widespread application and integration of technology and data into the workplace is predicted to have significant impacts on industries and careers, though the scale of the impact is still being debated.

Some argue that these changes will make millions of jobs obsolete while creating millions of new jobs in industries not yet invented. In 2013, a University of Oxford study predicted that nearly half of American jobs were at risk of being taken over by computers within the next two decades. The World Economic Forum estimates that 16% of jobs are at risk of displacement after accounting for potential job gains from new technologies. The McKinsey Global Institute estimates that a third of American workers may have to change jobs by 2030 because of artificial intelligence.

Others believe that the most significant impact of AI and automation will not be on the number of jobs but on job content. Few occupations will be totally automated but routine and basic activities will be completed by computers in the future. Emerging jobs are increasingly hybrid roles that require both technological and data knowledge alongside more advanced liberal arts and industry specific skills.

In a recent survey, 74% of executives say they plan to use AI to automate tasks to a large or a very large extent in the next three years, but almost all (97%) note they intend to use AI to enhance worker capabilities. These same individuals believe that only about 26% of their workforce is currently prepared to work with AI and automation as part of their roles (Accenture 2018). In this environment, highly-skilled workers will benefit as they are able to quickly respond to new technologies, while lower-skilled workers will experience wage pressure and increased job competition as existing responsibilities are automated.

Another trend is the emergence of what some are calling the "gig" economy, in which people are hired on a task-by-task basis, often through a digital marketplace, to work on-demand rather than as full-time employees. In this future environment, individuals will need the ability to be adaptive and self-directed and have access to institutions that will support their development.

This changing work environment and emerging industries may require skills and competencies that are not yet part of any college curriculum and will challenge higher education to stay current in the content of our core curriculum, academic programs and credentials, and in the methods of instruction to meet these changing expectations.

Lifelong Learning

One of the most significant changes to educational delivery is the growing expectation that a person will need to engage in ongoing professional education over the course of a career. In the emerging work environment, it will no longer be sufficient for an individual to complete all of their formal education at the beginning of their career. Ongoing formal and informal education will become a necessity in order to stay current with new technologies and industries, as will the need to engage in learning experiences that are short in duration, "just-in-time", and embedded into employment.

Instructional methods will certainly continue to include classroom-based learning, but there is growing interest in expanding experiential learning opportunities as part of traditional degrees and lifelong learning. There is a growing interest among learners and employers to include multi-channel approaches to foster continuous learning that includes mentoring, digital on demand, job shadowing/ apprenticeship, simulation/augmented reality, professional coaching, and collaboration/peer-to-peer learning.

One concern is that lifelong learning models are predicated on the learner already having an existing degree or credential to build upon. Given the existing gap in educational levels between white and underrepresented populations, the move to lifelong learning as the pathway for job attainment and career advancement could exacerbate the economic divide that already exists in the U.S. Developing career pathways which offer workers a sequence of educational opportunities and credentials that they can earn progressively over time will be critical to assist underemployed or unemployed workers in reskilling or upskilling to keep or gain employment.

Alternative Credentials

Responding to the changes brought about by technology and artificial intelligence, especially the need for individuals to reskill over the life of their career, is putting pressure on higher education institutions to develop new ways to validate learning. Alternative credentials are seen as one way for individuals to provide clearer signals to employers about specific skills and to provide greater flexibility and customization by the individual learner.

"Education will always be about more than credentials, but many developments, innovations, and experiments have the credential as an important aspect. Education is important independent of credentials, but credentials play a role in symbolizing, recognizing, and displaying educational experiences and achievements, new knowledge and skills acquired, and milestones" (Bull 2018).

Alternative credentials are defined as a mechanism to record the competencies, skills, and learning outcomes derived from assessment-based, non-degree activities that align to specific, timely needs in the workforce. They are most often discussed as ways for those with an existing baccalaureate degree to augment their existing credentials to re-skill or upskill as part of their career path. The digital verification and portability of these credentials is a critical component of their future viability. The industry is looking to digital open badges that are configured with standardized data that communicate the criteria required to earn them, the assessment tools used, and the links to digital forms of evidence. Organizations are currently experimenting with different approaches to a universal data structure for these types of open badges so they are portable by the learner across institutions and employers.

Alternative credentials are not a new phenomenon. In fact, a 2014 study by the U.S. Census Bureau revealed that 30% of the adult population holds an alternative credential. But their growing importance and interest to entities outside of higher education makes the purposeful development of alternative credentials a critical topic for traditional higher education institutions in the future. For example, in 2016, LinkedIn launched more than 50 "Learning Paths" and other organizations are offering coding boot camps and other opportunities to provide need-to-know content to working professionals, just-in-time, in small units, often with associated digital learning credentials. In response, the U.S. Department of Education's "experimental site" program now allows alternative learning providers to quality for Title IV student aid – which previously had only been available to traditional higher education institutions.

While the discussion of alternative credentials tends to focus on non-traditional degrees, Brigham Young University has created a "certificate first" model where the student earns a job-related credential as the first step in their undergraduate education and then engages in general education on the way to completing a undergraduate degree. Early indications support their hypothesis that providing a working credential first improves retention rates, especially among at-risk students. The persistence rate for students who earned a certificate first was 85%, compared with 65% for those who did not.

Alternative credentials are not without challenges. In some instances, entities have struggled to design and apply effective learning methods and appropriate direct assessment methods for certification. The pressure to deliver fast and nimble programs have impacted learning efficacy and have not yet achieved full recognition or accreditation. Some argue that this creates a significant opportunity for existing, accredited institutions of higher education to aggressively move into the alternative credential market because of their existing expertise and accreditation. But in order to do so, traditional institutions will need to adapt and build new capacities to deliver new types of credentials that are more learner- and employer-responsive much more quickly and at scale. They also will need to develop outcomes-driven learning design so direct assessment of learning can occur. The faculty role in designing the credentials

and assessments in collaboration with industry is key and will require creating space, time and opportunity for faculty to learn about workplaces of the future and be the active facilitators of knowledge and skills development for our students.

Competencies and Direct Assessment of Learning

The growth of alternative credentials has brought to the forefront the conversations about the need for more direct measures of student learning, competencies, and skills. These conversations have been fueled by the growing interest in competency-based education (CBE), prior learning assessment (PLA) and online and hybrid learning models as a way for non-traditional students to gain greater access to higher education.

To support this effort, the Lumina Foundation has created a beta version of a Competencies Framework that might be used to establish common definitions and a framework that could be used by multiple institutions. The Lumina Framework uses competencies, or what the learner knows and is able to do as a mechanism to compare levels and types of knowledge and skills that underlie degrees, certificates, industry certifications, licenses, apprenticeships, badges and other credentials. Once fully vetted, they believe that the Competencies Framework could improve:

- Equity: More transparent credentials create clearly visible pathways to increase career and economic mobility for historically underserved and underrepresented populations
- Credential transparency: The Framework makes it easier to understand the competencies associated with any credential.
- Comparability: It makes it possible for stakeholders to compare the value of various credentials and determine which credential best fits their needs.
- Portability: It supports the translation of learning acquired across institutions and between academic institutions and employers.

It is predicted that as post-secondary learning expands to include competencies and direct assessment of learning, education will become increasingly personalized and less reliant on seat time as a measure of learning.

Liberal Learning and Practical Skills

"A robot-proof model of higher education is not concerned solely with topping up students' minds with high-octane facts. Rather, it refits their mental engines, calibrating them with a creative mindset and the mental elasticity to invent, discover, or otherwise produce something society deems valuable. Instead of training laborers, a robot-proof education trains creators." –Joseph Auon

Even as industries change and new technical capacities are identified, there is growing agreement that all graduates, regardless of credential, need an education that includes both liberal learning and practical skills. The both/and model that provides marketable skills and encourages intellectual resiliency and flexibility will be necessary in order to navigate the rate of change in American society and to enjoy a successful career and social and economic mobility over a lifetime. This will require a rethinking of how to infuse creativity, critical thinking, communication, problem solving, cultural competency, and entrepreneurialism across all educational experiences.

Dr. Joseph Auon, President of Northeastern University, calls this new model of developing advanced technology and humanistic competencies "humanics." He argues that "in the future, three new literacies (technological, data, and human) will form the foundation of content knowledge and mastery. These

literacies will be facilitated by new pedagogical approaches that develop four cognitive capacities (critical thinking, systems thinking, entrepreneurship, and cultural agility) – a sort of reframed trivium and quadrivium for the modern age" (Auon, 2018).

Key to future learning approaches will be the opportunities for learners to participate in applied and project-based learning experiences, such as internships and apprenticeships, in order to integrate technical skills and liberal arts capacities in real-world applications.

Higher Education-Industry Partnerships

Responding to rapidly changing work environments will require an increase in the quality and frequency of connections between higher education institutions and industries and communities. Increasing the formal and informal bridges with industries and communities will create ongoing opportunities for innovation in both.

Engaging employers in shaping the development of credentials allows for increased responsiveness to changing job skills, especially the need for technology-related education and the perceived 'skills gap' among employers. This also creates opportunities for colleges and universities to validate on-the-job learning and to develop more research-based understanding of professional skills and competencies in the future. In some future scenarios, colleges and universities will play the additional role of certifier of formal and informal learning experiences that align with career ladders that have been developed in partnership with industry.

Examples of these partnerships are starting to emerge.

- Arizona State University is partnering with Starbucks and Uber to provide fee online education for their employees.
- The New York City Economic Development Corporation developed CyberNYC, which involves a consortium of academic institutions including the City University of New York, Columbia University, New York University, and Cornell Tech, with the goal of making New York City a cybersecurity hub. Cyber NYC educational opportunities range from programming bootcamps through a master's program in cybersecurity. It also includes a Tech-in-Residence program for industry professionals to serve as adjuncts to the program.
- Seven colleges and universities are working with industry partners to develop digital badges to help underserved students display their skill and gain employment as part of a pilot project called #TeeUpTheSkills. The project aims to identify skills required by employers to fill in-demand entry-level positions and to help minority students gain and display these skills with digital badges.
- Apple, Facebook, and Amazon AWS Educate have unveiled curricula for certificates based largely on their platforms and tools, all of which include collaborations with community college partners to develop credit-bearing pathways on the back end of completers. Google brought together a consortium of more than 20 employers, including Bank of America, Intel, Hulu, Walmart, Sprint, GE Digital and PNC Bank, who are interested in hiring completers.
- Google launched a new online certificate program aimed at people who are interested in working in entry-level IT support roles. By working with Jobs for the Future, a nonprofit group, a growing network of more than 25 community colleges in seven states are working to integrate the Google certificate program into more traditional academic programs. Many of the college partners will offer prior-learning credit for the Google certificate holders. Northeastern University will grant credit toward a bachelor's of science degree in information technology.

Duke University also plans to add the Google certificate program to the expanding number of online courses and bundles of courses – or specializations – it offers through Coursera.

Key Terms in the Nature of Work Discussion

- **Credentials** are a specific quantification issued by an authoritative third party to signify that a person has achieved a particular transferable skill set or accomplishment.
- **Formative assessments** monitor student learning by providing ongoing feedback.
- **Summative assessments** evaluate student learning against a standard or benchmark. They are high stakes, meaning they have a high point value and are issues at the end of a defined educational period.
- **Micro-credentials** represent a specific skill or piece of knowledge that a learner has acquired at a granular level. Typically, the learner has to demonstrate the skill or knowledge to be awarded the micro-credential. Micro-credentials are often represented as digital badges.
- **Learning Record Store (LRS)** is a system for storing and reporting learning data and experience across all platforms. The LRS is used in conjunction with the experience application interface, software used to capture both formal and informal instances of learning, which are then stored in the LRS.
- **Nanodegrees** are compact, stackable credentials aimed at giving learners a specific skill set quickly and affordably, often in a year or less
- **Learning agents** are the many adults who might support learning in an expanded learning ecosystem

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