Future Innovation Trends Influencing the Higher Education Business Model
Implications and Strategies for University Leadership

Executive Summary From the University of North Carolina at Chapel Hill
Ted Zoller, Senior Fellow
Jacob Stiglitz
Fletcher Curran
Introduction
Outlining macro factors affecting the landscape of higher education, identifying benefits and threats.

Updating the Academy
Future focus on two dimensions: (1) teaching and learning and (2) accelerating research.

Implications
Applying these trends to the future business model.

Lessons
Concluding with actionable steps for higher education leadership to manage the transition.
Introducing the Changing Landscape of Global Higher Education

Convergence of Three Macro Trends Influencing Higher Ed Modalities:

1. **Singularity** emerging among immersive online experience, personalized learning, and enhancements in collaboration tools

2. **Seamless** Offline Residential and Online Learning Environments

3. **Syndication Globally**, Co-authoring and Teaming Networks promoting of Research and Translation based on Open Innovation.
Trends influencing university learning

Acceleration of research

UPDATING THE ACADEMY
Acceleration of research

Trends influencing university teaching and learning

2

UPDATING THE ACADEMY
Four Key Trends Influencing the University

- Massification
- Changing Student Experience
- Rise of Credentialing
- Improving Faculty and Pedagogy

Introduction
Updating the Academy
Implications
Lessons
Trend One: Massification

Questions that leaders ought to consider:

How will the student experience change to reflect increased access across society and globally to support the growing knowledge economy?

How will the knowledge economy’s continual change effect students’ need for lifelong access to education?

With the competition for talent now a fully global phenomenon, how will educational institutions alter their curriculums, services, etc. to account for this shift?

Major themes influencing massification:

- Changing student demographics
- Rise of ongoing/lifetime learning
- Transnational & multi-institution partnerships
- Increasing need for vocational/applied learning
- Technology as a driver of collaboration
The rate of enrollment will drastically increase globally in the next 20 years, partially due to the rapid rise, from both a population and economic standpoint, of countries like China and India.

Institutions will face increasing enrollment numbers worldwide

However, this growth will not be distributed equally, and so areas with lower amounts of growth must compensate for this shift towards the west as a center of education.

Asian and Pacific regions are projected to see over 270% increases in enrollment, and all other areas are projected to at least double by 2040...

... except the U.S., which will see just 16% growth, and will now have to compete with multiple centers of education.

Question to consider: How can institutions invest in technologies that will facilitate an increase in enrollment at the necessary rate?
Massification is no longer a primarily European and American trend. Institutions must factor mobility of talent into their long term visions; a failure to do so would be detrimental to their capability to retain strong students.

Access to education has seen drastic changes over the past 70 years, as globalization and technology have helped to minimize the drastic differences in educational institutions worldwide.

Mean years of schooling, 1950
Average number of years of total schooling across all education levels, for the population aged 25+

Mean years of schooling, 2017
Average number of years of total schooling across all education levels, for the population aged 25+

Question to consider: What lessons can countries who have grown at a slower pace take from stronger educational systems to further minimize this gap?
Most of the world will have at least upper secondary education by end of century. This rapid change in education demographics will undoubtedly create unforeseen circumstances and needs, and institutions that invest in their capabilities will be best positioned to capitalize.

The rise in post secondary education is partially due to the rise of the middle class in the most populous western countries. But the large number of upper secondary populations implies a growing market for specialized schools in various trade industries.

Question to consider: How will smaller universities and institutions invest in their ability to attract talent that may otherwise enter the workforce immediately?
Trend Two: Student Experience

Questions that leaders ought to consider:

- How will student services be delivered to an increasingly large and diverse (geography, age) student population?
- How can students have consistency in instruction as they move across institutions and delivery formats?
- How can education become more affordable to ensure better equality in access?
- What support will students need to survive and thrive in project-based coursework and experiential training for credit?

Major themes influencing student experience:

- Non-traditional student support
- Online student support
- Experiential learning
- Articulation
- Affordability
The upper strata of tertiary education was shifting online long before the pandemic. Faculty and staff may be tempted to disregard online integration as a temporary shift, but data suggests that as technical capabilities expand, comfort with online learning increases, particularly at higher levels.

It is imperative for universities to recognize that as technological advances allow for increased access to education, they also allow for unprecedented access to other commitments, such as virtual internships or other skill-based learning endeavors.

While 80% of online master’s students report living within 100 miles of campus, institutions are able to increasingly draw candidates from around the world to enroll.

Reasons for Online Learning Choices by Students in 2018

- Existing commitments do not allow for attendance in campus-based courses: 47%
- Online learning was the only way to pursue the field of interest: 21%
- Employer incentive or partnership: 21%
- Reputation of a specific school: 8%
- Other: 4%

Question to consider: Are universities ensuring that the quality of these programs matches that of on campus programs? How are student services and experiential components delivered?
Free, open courses have also continued to grow exponentially. This circumvention and/or supplementation of typical university curriculums and programs suggests universities are not currently meeting students’ needs, or at the very least are facing increased competition for attention of their students.

The prominence of business and various sciences implies students are seeking alternative routes to strengthen their credibility in the workplace, as opposed to less intensive learning for the sake of it.

Question to consider: Are universities making necessary efforts to see what services are provided by MOOCs, and looking into some sort of cooperation or incorporation?

The learning curve graph shows the cumulative number of courses offered by major subject areas from 2011 to 2017. The courses by subject graph highlights the growth in courses by subject, with a focus on Business & management and Computer science & programming, which have seen the most significant increases.

Source: Class Central Economist.com

*By start date
Trend Three: Rise of Credentialing

Questions that leaders ought to consider:

How will educational progress and attainment be tracked and measured as people learn across multiple institutions, on the job, and throughout their lives?

How can credentials be created to improve access, decrease cost, and allow quicker time to employment?

How can the quality of programs be assured as they are quickly created to meet student demand and a changing work landscape?

Major themes influencing credentialing:

- Technical vs. Cognitive
- Employer acceptance
- Changing job market
- Micro-credentials
- Stackable credentials
Credentialing has drastically risen in frequency within the job market

Awareness of micro-credentials among employers is becoming more common, a trend undoubtedly accelerated by the pandemic.

With the rise of platforms like Edx and Coursera, students are consistently seeking a competitive advantage online, which is reflected in the employment process.

Given there are many types of micro-credentials, institutions that best integrate them into their systems & curriculums gain strong positioning with employers.

Question to consider: In the future, will there be two spheres of education (i.e. institutional and personally pursued) or will universities try to absorb these platforms into their services and curriculums?
A growing number of universities and industry leaders worldwide are looking to diversify their educational services.

While some forward-looking universities and companies are participating in this initiative, it is still primarily private platforms that develop, curate, and deliver the educational courses.

Universities must identify the companies working with credentialing platforms to stay ahead of trends: 76% of companies that recognize Edx MicroMasters Programs are in industrials/construction, information technology, or financials.

The flexibility provided by these platforms often attracts potential students who have other obligations and may not be able to attend a university full time, a market that will grow in the coming decades.
Employers want to see various improvements in credentialing.

With room for improvements in this area, educational institutions ought to invest in partnerships with the strongest platforms, lending credibility to them while simultaneously broadening the capabilities of the institutions.

Real world experience and quality assurance were among the most common requests from employers to align hiring signals with credentials.

Question to consider: How can universities constructively collaborate with industry while maintaining their much-needed independence from industry pressures that may compromise the integrity of holistic learning?
This search for other methods of improvement among students is well-founded concern. As the world becomes increasingly interconnected, jobs and roles previously unimagined will emerge, and students feel as though their base of knowledge does not suit this massive labor shift.

Only half of students feel as though they will land a job in their desired field, and roughly a third think they will actually be successful.

This concern stems from the permeation of information technology, particularly in advanced economies, which are much further along various automation timelines.

Confidence of Students in Their Capabilities (2017)

Most curriculums and programs fail to reflect the increased incorporation of information technology in the global economy, and new structures are necessary to align university capabilities with labor market needs.

Question to consider: Business and science are obvious places to start, but how will technology affect other areas of study and research? Will universities have to take different approaches based on the level of technological integration in a certain field?
Credentials are very helpful for technical roles, while higher education is necessary in most other fields. Online learning excels in providing content that is technical in nature, but the fourth industrial revolution necessitates the ability to comprehend vast amounts of data, an area where higher education has the structures to execute.

Certificates have a significant benefit for engineering and technical roles, but are too weak to stand alone in most other fields. Universities must act quickly to improve their non-routine cognitive capabilities before this gap is narrowed as well.

Because online learning still has major gaps from a cognitive/conceptual learning standpoint, universities must establish themselves as a provider of the interactive/holistic learning process that is essential in the 21st century.

Question to consider: How will universities effectively integrate and emphasize cognitive tools like data analysis, mental models, etc. across multiple disciplines?
Trend Four: Improving Faculty and Pedagogy

Questions that leaders ought to consider:

- How will the role of the lecturer change with the availability of high-quality on-demand digital content?

- How can faculty better integrate with employers to ensure they are meeting the demands of the changing work landscape and preparing students properly?

- How are faculty being prepared to provide quality educational experiences to an increasingly large and diverse student population?

Major themes influencing faculty and pedagogy:

- Digital Course Content
- Online instruction
- Updating curriculum
- Upgrading Pedagogy
- Faculty training
Institutions have increasingly relied on adjunct faculty in recent decades. Such a reliance on this kind of teaching can become problematic when institutions undergo change or redirect towards the future, as has been necessitated by the rise of digitization and online learning, as well as changing demographics.

Adjunct professors typically seek multiple income streams and thus have less time for students overall; as a result, an overreliance on them will put a university at a competitive disadvantage in the long term.

Question to consider: For universities that use a significant number of adjunct professors for budget reasons, could a shift in investment towards cost-saving technologies alleviate this overreliance?
Most professors anticipated a shift back to in-person classes in near-term.
While professors made necessary adjustments such as changing the kinds of assignments required, the majority did not change their expectations of students, implying most changes were temporary in nature.

This short-term view of change could be problematic in the future. We recommend professors invest in their tech-related competencies, as tech integration in the classroom will only accelerate.

Question to consider: Given the reliance on adjunct faculty and no formal tech training, how can university and industry leaders collaborate to strengthen faculty skills?
Faculty may need guidance on navigating current and future trends. As tech accelerates and more waves of innovation arrive, online pedagogy must accelerate and improve at a similar pace; this improvement begins with faculty and their preparation.

Given that 65% of faculty in the U.S. has no experience with online teaching, it is no surprise that the majority of faculty would find assistance helpful for the online transition.

**Question to consider:** Given the rapid transformation undertaken in the private sector, can universities learn from their counterparts and institute similar measures?
Three potential initiatives that will improve student quality before arrival at university.

Given students typically spend a relatively brief amount of their academic career in tertiary education, we would be remiss not to provide pre-tertiary solutions that will reap long term benefits for the quality of the entire educational ecosystem.

Ensure all national and local educational programs and investments in innovation capacity address the access, diversity and inclusion of minorities and women—with a goal to increasing their participation tenfold.

Ensure all levels of workforce development programs and training enable a highly skilled, digitally competent, innovative workforce beginning at secondary school levels.

Launch new community-based public and private partnerships to support students and entrepreneurs, by expanding innovation and entrepreneurship curricula in primary through higher education—with a goal to retain and grow regional innovation capacity.
Universities 4.0 Discussion Paper: University models

QUESTION: How can universities respond and adapt to changing social and economic conditions, transforming their core functions and generating new operational, educational and research models, without relinquishing their essential role in building the global common good?

- Implications of Shifting Demographics
- Growth in Social Mobility
- Technological Disruption Ushered In by the Advent of New LMS Technologies on the Cloud and AI
- Financial Pressure and the Rise of 'Unbundling'
- The Porous University

Report from James Metson & Cate Roy Forthcoming
UPDATING THE ACADEMY

Trends influencing university learning

Acceleration of research
Acceleration of Research

The Council of Competitiveness has set a bold objective for leapfrog progress in U.S. research – an example of the scale of opportunity all nations face. They propose a 3-tiered initiative in which universities should try to collaborate with other stakeholders to achieve 10x growth in the following areas.

10x: Increasing the Number of Innovations Developed in and Deployed by the United States

1. Restore federal research and development (R&D) investment to 1960 levels of two percent of GDP.
2. Establish a new, non-profit American Innovation Investment Fund with initial public-private capitalization of $100 billion.

10x: Increasing the Speed at Which the United States Innovates

1. Extend the mission of national labs to encompass economic competitiveness and permit co-funding with private sector partners.
2. Expand access to and public-private financing for shared research institutions and industry-led pilot demonstration projects.

10x: Increasing the Number and Diversity of Americans Engaged in Innovation

1. Redesign federal economic development programs to support innovation building capacity, eliminating outdated grant criteria and duplicative funding by adopting innovation metrics and performance standards for new block grant programs.
2. Conduct through State Competitiveness and Innovation Councils regional innovation mapping and assessments for building future innovation capacity.

GFCC is harnessing leapfrog research and innovation potential among its partner institutions globally.
3 Drivers for Exponential Research Models: Big Data, Machine Learning, and AI

With the advent of the cloud, data analysis, computation, AI and machine learning has EXPLODED, leading to higher throughput research models.
Global Research Networks and Teams

Research and development networks evolve from insular to global to open, with university, public, private and NGO stakeholders integrated across the cloud.
The urgency of COVID-19 pandemic accelerated the path to rapid global development and syndication of not only the vaccine vectors, but the Patient Testing Protocols and Standards to rapidly accelerate development.

Resources like the NSF’s 10 Big Ideas and New Models for Research and Innovation, concepts like the Lean Startup and Closed versus Open Innovation, and examples like the Covid-19 international collaboration and research act as benchmarks for where university research needs to go in the future.

Streamline Bureaucracy

Enable Trust Through Collaboration

Leverage Data Systems

Maintain Transparency with Open Source Data/Results

Key Concepts for Acceleration of Research

Introduction

Updating the Academy

US NSF iCorps Lean Process

Research Translation as a System

Trends toward Open Innovation

Closed Innovation

Open Innovation

Implications

Lessons
New Models for Research Translation and Commercialization

From the evolution from tech "transfer" to "translation" has ushered in a new era of cooperative research and development taking advantage of Convergence.
Universities 4.0 Discussion Paper: Technology as a transformation enabler

QUESTION: What are the key technologies that universities should consider when thinking about the future within the context of the fourth industrial revolution - Industry 4.0, how will new technologies impact universities and what new types of education and enterprise models they could potentially give rise to?

- Collaborative, Technology Driven Research
- Positioning the University to Tackle Global Challenge
- Accelerating the outcomes and impact of research
- New Models of Transfer, Translation and Open Science

Report from Aleks Subic Forthcoming
Accelerating Learning with the Higher Education Business Model
Universities must realize that the method of instruction delivery will be vastly different over the next few decades.

New products must be developed to meet the new types of students that are emerging globally, and specifically online.

These can take the form of new stackable credentials and other digital innovations.

Universities must engage in collaboration and consolidation with emerging actors such as private education companies and independent educators, as well as tangent actors such as business, government, and non-profits.

This collaboration must better align education and workforce readiness to reduce the skills gap seen by employers, and bring cost of delivery down to democratize access to education.

Simply put, the educational experience no longer occurs within one university, and those who engage in educational protectionism will be left behind as the learning experience goes global.

Most institutions lag behind industry in terms of efficient allotment of investment between human, digital, and infrastructural capital; rethinking this allocation is critical for future decisions.

Faculty, particularly senior faculty, must be trained and supported to integrate digital tools into their pedagogy in an effort to bridge the digital divide.

Universities must seek ways to use their existing and leverage new technologies to enhance efficiency of faculty and improve their skills/student interaction.

Financial capital must be directed towards building a digital infrastructure encompassing existing technology, widespread integration of emerging tools to increase efficiency and capacity of human capital.

Universities must be thoughtful in their integration of effective learning processes with new technology as opposed to letting new technology dominate curricular decisions.
Global Collaboration
- The future of research is globally internetworked at the investigator level; there is no reason not to have the most advanced researchers globally communicating on similar projects and fields of study.
- Syndication will include university research sites combined with government, NGOs and industry.
- Seamless cooperative frameworks for joint research and development goals must be developed; jumping into collaboration without any structure will lead to miscommunication and a disjointed process.

Leveraging Technology
- Research throughput will be dramatically accelerated through the application of big data, machine learning and artificial intelligence.
- Utilizing cloud based technology and open sourcing data is key to the acceleration of research; when progress is siloed it becomes difficult for diffusion to occur.
- With this increased technological collaboration, it will also be important that research be made available to the public and even approached as an open platform (whenever possible) to ensure both academic integrity but also democratization of research in parallel with that of education.

New Models of Research
- The COVID-19 pandemic ushered in new global research and development models in medicine, which should be sustained as well as adopted in other disciplines.
- Transfer activities will be enhanced through translation and again by the singular convergence.
- It will be important to look across industry and government models to see what has worked in the past for various accelerated timelines; a significant amount of time can be recouped by looking to remove cumbersome administrative processes and procedures while maintaining research integrity.

Accelerating Higher Education Learning Based on the Trends of the Higher Education Business Model
Increases in Inequality

- While new modes of education unlock unprecedented access to information for a truly global population, there is potential for a divergence, rather than convergence, depending on how ubiquitously these technologies are integrated into education.

- There are concerns that a bifurcated system will emerge, where privileged students have access to face-to-face teaching, research-rich environments while those with lesser opportunities are simply left with automation and algorithms.

- In addition, without universal university embrace of credential learning, there could develop a two-tier system where employers view those with primarily credential learning as weaker job candidates given lack of trusted verification.

Alienating Digital Learners

- New technologies and MOOCs are not created equal; without university collaboration, student support, and verification in these areas, poor learning experiences may keep current educational inequalities in place.

- Gains in personalization may be offset by a loss of relational aspects of learning, opportunities for dialogue, and broader experiential learning.

- Without the social and cultural capital that so often makes the learning experience holistic, fragmented courses and curricula may result in subpar outcomes for those who can only access online resources.

Weakening of University Autonomy

- While collaboration with industry is key for job preparation, too much outside influence may turn tertiary education into a labor-enhancing institution, rather than a student/person/citizen-enhancing institution.

- While comparative advantage theory may be useful for a global economy, when applied to global learning it may result in increased specialization, which when taken too far can result in artificial segmentation and global siloes, resulting in a loss of synergies.

- Universities must remain insulated from the immediate priorities of outside stakeholders to foster groundbreaking science and innovation, rather than yielding to short-termism and a potential devaluing of curiosity driven research.

Implications of the Trends on the Higher Education Business Model

Potential Pitfalls
APPROACHING THE SINGULARITY
Realizing the Future Value on Innovation in Higher Education
Lessons for University Leaders to Manage the Transformation

1.0 Immediate Term:
- The need for responsiveness to this transformation is immediate and longstanding
- Recruiting champions of this transformation will accelerate the transition process
- New educational formats and models must be taken seriously and built into the baseline of strategy moving forward
- We must embrace sustainable future investment rather than endorsing short-term protectionism
- We must increase access through decreased tuition through strategic technology investments that provide efficiency rather than unsustainable cost-cutting measures
- It is key to not lose the liberal arts as this transition occurs; there must still be a focus on the development of the whole individual and interpersonal networks, rather than solely skills training for the job market
- While early adopters may complicate the market initially, the results will support the broader ecosystem by pioneering new innovative models

2.0 Medium Term:
- The lifecycle of creation and new innovation needs to be faster with translation and application as part of the process
- New organizational models, including partnerships and programs across stakeholders should emerge with a strong focus on global priorities such as the energy transition, pandemic resiliency
- Research ought to be independent and curiosity driven; however, universities ought to take steps to implement findings into real world solutions when possible
- Transparency and accountability must be an utmost priority with a commitment to upholding data transparency to contribute to the global body of knowledge
- We need strong leadership in order to carry this out; focus needs to be on cultivating and supporting talent at all levels

3.0 Long Term:
- Institutions must focus on institutional quality and international relevance to be positioned for long term success
- With such market saturation, universities must differentiate and specialize rather than being broadly mediocre
- As universities specialize, they must also strive for stronger global connections, benchmarks, engagement in alliances, transformational projects, new types of arrangements and networks
- Faculty knowledge should not be held proprietary but rather as a part of a global body of knowledge: open innovation, acquisition of insight, and societal added value
- Deliberate fiscal responsibility and continual investment is needed to ensure the sustainability and systematic improvement of our institutions
- Universities should continue to invest in and maintain strong social capital infrastructures alongside new digital infrastructures
This material was developed under the framework of the GFCC University and Research and Leadership Forum. Launched in 2016, the Forum serves as a living think tank for the identification and discussion of trends and the generation of ideas for optimizing the university enterprise. Through this initiative, the GFCC facilitates new collaboration, provides global visibility to relevant experiences and original thought in the field, and sheds light into how global education and research institutions contribute to innovation and competitiveness.
Partnerships

Networking

Benchmarking

Advice

Analytics

Research

Training

With a footprint in more than 30 countries, the GFCC is a global multi-stakeholder membership organization that convenes universities, corporations, government agencies and private sector industry organizations and councils. Leaders and organizations in our network strive to advance innovation, productivity and prosperity in their nations, regions and cities.

Visit [www.thegfcc.org](http://www.thegfcc.org) and contact [info@thegfcc.org](mailto:info@thegfcc.org) for information and membership.