Redefining the Future of Higher Education in the 21st Century: Educating and Preparing For Today and Tomorrow

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Abstract

In a rapidly changing higher education system and a reshaped world, the ground beneath the feet of the nation has shifted so dramatically that one need to reimagine the roles and ways in which higher education will work again for the 21st century and continue into the future. The connection between prosperity and education is direct, powerful, and torpid but faced with a simple choice to create a future and control its destiny as how to better serve students, their communities and nation. For higher education to move forward, it is imperative that several crosscutting elements be embraced to renovate institutions globally. There must be a fortified infrastructure of support at all levels, a focus on professional development programs, and technologies for learning and data/learning analytics, and capacity building for collecting, analyzing, and using various forms of data for student success. Higher education leaders must be able to ask themselves what legacy do they want to leave for the next generation of students? Times have changed. Students have changed, modes of learning and accessing information is distinctive. By so doing, higher education will be safe and able to embark and persevere on the journey of change. This study focused on several key issues for refinement of higher education: redesign, redefine, refocus, reinvent, rebirth, and reset higher education for today and tomorrow and in the future decade to come. Additionally, the study examined demographic shifts for 21st century learners, major factors defining trends in future higher education, and globalization relative to the future of higher education.

1. Introduction

Higher education is not what it used to be, and in the future it will not be what it is now. There appears to be a trend as to how far we can go and how far we become in higher education as the doors of opportunity glide within the academe in years to come. Higher education has profoundly changed over the past decades. It has evolved within the academic enterprise has yet to content with the implications of these changes. Academic institutions have faced pressures of increasing numbers of students and demographic changes, accountability demands, new technologies, and data analytics on a global scale.

There are still many students across the globe who have not had the opportunity to benefit from higher education. The question is how do we create opportunity and equity for all students? Higher education has gone through such remarkable changes and disruptions due to the economy. It is a challenge to predict what the future of higher education will be tomorrow and the future to come.

Based on the future of the higher educational system institutions are faced with the ever increasing demands as to how to best teach and reach students. The process of teaching and reaching students has simply lead to a flipped classroom model approach that is challenging to faculty members but the outcome leads to improvements with the engagement of students and feedback that allows for opportunity to assess what is working and what is not working in courses [1].

Many universities are moving towards new forms of teaching and learning that will definitely impose new classroom configurations, and to rearrange learning environments to accommodate active learning for students. Currently, there is a greater shift in higher education to encompass a deeper learning approach with students that allows them to be engaged in critical thinking, problem solving, and competency based/project learning [1]. Professors are leveraging tools to guide planning and management to assignments that give real life applications.

This approach aids students in taking control of their own learning, engagement, and gives them the tools necessary for solutions to global problems. A primary goal for higher education is to be able to equip all students with the skills they need to be successful in the workforce and to have an impact on the world. According to the Association of American Colleges and Universities, recent graduates should be more prepared in the areas of critical thinking for the 21st century [2]. Changes in the educational model of how to teach students requires a variety of strategies and techniques for academic success for students [9]. The driving force obliges institutions to assemble, confront, and transform the higher level skills and knowledge to ensure that future generations experience and provide graduates the skills needed to be effective in a global and competitive economy.

2. Redefining Higher Education for Learning

One of the most pressing issues confronting higher education today is optimization of learning by students and society. Students must be increasingly diverse in their learning in order to be effective citizens and workers so that they are able to meet the demands and challenges they will encounter in lives. To do this, institutions will need to be prepared to educate graduates to live in a complex world. This type of learning extends beyond the classroom walls, this type of learning impacts societal businesses, corporations and organizations.

This approach will push institutions to rethink the nature and content of their degrees as well as the timing and mode of delivery of such actions within the pedagogical platform. Studies [2], [3], and [4] have indicated that younger populations are the utmost diverse and will have the greatest impact on population changes in higher education. According to [2], the United States population is also growing. The population grew 9.7 percent from 281.4 million to currently 308.7 million between the years of 2000 and 2010. By 2030 the Baby Boomers aged 65 and above plus roughly one out of every five United States residents will be entering into the so called Golden years. The population of individuals 65 and older will more than double by 2050 and those individuals 85 years and older will more than triple [4].

Due to the changing trends, higher education institutions will need to work harder than ever before to meet the demands of individuals living longer and wanting to continue their education. Institutions are going to have to go beyond the paradigm of most educational, business, science, computer, and technological programs in order to undertake an exciting challenge of developing 21st century educators for a 21st century world for tomorrow. By 2018, it is projected that approximately two thirds of all jobs will require a postsecondary certificate or degree [4]. See Table 1. Percentage of Workforce by Educational Attainment projections from 1973-2018.

A generation or so ago, nearly three quarters of employed Americans could obtain a high school diploma or less. [4] projected from 1973-2018 that the United States has been under producing graduates and that if this continues will we as a nation be able to meet the challenge? [4] indicated that unless the nation reverses this competitiveness, approximately 60 million Americans are at risk for being stuck in low rage jobs that over time will not allow individuals to support a family. Higher education institutions globally have such a crucial role to play in this situation. It is critical that college graduates whatever their location should be not just globally competitive but also globally competent. Today's preparation of students for the future entails planning and management in relation to workplace of tomorrow.

Table 1. Percentage of Workforce by Educational Attainment: From 1973-2018

	1973	2007	2018
100%	7	11	10
75%	9	21	23
50%	12	27	29
25%	72	41	38
0%			

___Master's +   ___Associate Degree or certificate

___ Bachelor's   ___ High School or less

The next generation of students must have a different skill set than that of students in the past. Students need to be taught and learn how to be flexible and adaptable to changing work environments. College today means more than just a pursuit of a 4-year degree from a university. Students must be prepared for any postsecondary education and/or training experience which leads to a postsecondary credential such as (i.e., certificate, license, Associates or Bachelor's degree). Higher educational systems will need to begin with plans on preparing students for careers of the future. The careers of the future will require students to not just have the academic knowledge, but they must have the technical knowledge as well as employability knowledge with the skills and outlook necessary for future success.

3. Demographic Shifts for 21st Century Learners

[4] projects that minorities will be the majority by 2023, and will also become the working age of Americans by 2039 thus the majority of all Americans by 2042. Furthermore, by 2025 students seeking to study abroad are projected to rise about 8 million [6]. College students enrolled in higher education are anticipated to be more than double to 262 million by 2025 [7]. The projections simply mean that there are going to be big changes to come in higher education to include reformation of admission requirements, residency requirements, international students, remediation, financial aid, and performance status. Caucasians remain the nation's largest racial group but their birth rate has been declining. Society can wait for years later or realize now the fact that our future in higher education is already here in this decade. Higher education is on the crossover of a seismic shift reflected in the demographical changes of students they will educate. Many of the projected trends reflect significant variance from region to region, state to state are being bombarded with the national projections

presenting the shift in racial and ethnic composition of student populations from a global perspective.

Minority students will account for approximately all of the growth among high school graduates over the next decade. This compels institutions to rethink their student outreach, recruitment, admission criteria, degree retainment/completion, and curricula as they continue to educate 21st century workforce and citizenry. Additionally, not only does the system need to be concerned about diversity but also about gender; for instance, women now make up about 57 percent of all college students according to [2]. The gender gap is broadening and the trends are that many of the students beginning college are not prepared; they are lacking in academic preparation. In 2012, a third of all incoming college students were taking remedial classes [2]. Many of these students are first generation students. Many of the changing landscape as it relates to diversity and higher education will be powered by the decision how to make sure college graduates are more prepared to enter the workforce after they graduate. Higher education will need to align postsecondary choices with careers that are available and readily useful now and for the future to come.

Higher education leaders will increasingly need to collaborate with P-12 schools and systems, businesses, local governments, and various foundations within the public and private sector as part of a communal and constant efforts to break down barriers and connect with others who actually strive towards similar goals for diversity and training.

4. Major Factors Defining Trends in Future Higher Education

Although the current higher education system remains deeply grounded in the 19th Century Model, the forces of change have continued to dissect and reshape the 21st century higher education approach. The forces driving the change in higher education include but are not limited to digital divide technology, learning economy that translates to learning management systems, online learning and online study aids, simulations, and fiscal constraints.

These forces have given rise to at least five major factors defining the trends in higher education for the 21st century. These factors are: competency based learning, workforce skills certifications and badges, data driven college admission practices, real time technology driven assessment, and boot camp academy/short term trainings.

4.1. Competency Based Learning

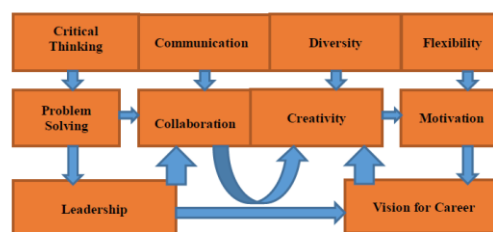There is a rising number of American workers at every skill level that will be in direct competition with workers around the globe. This is where institutions and society will feel the effect of globalization. Higher education institutions will need to work harder and more competitively to prepare students to invoke their creativity, and innovation within the workforce. Students no longer need a rudimentary education because that era has become completely extinct.

Institutions have to be willing to change the educational systems and face the simple fact that without change meeting the many demands of the ever changing workforce will become elusive. Education is even more critical today than it has ever been. Students are able to meet future challenges if their schooling and learning activities within the curricula prepares them for adult roles as citizens, employees, managers and entrepreneurs. A set of skills needed for the future will include next generation learning, college and career readiness, student centered learning, higher order thinking skills, effective communication, collaboration, and critical thinking.

Higher education now has a different meaning, college education path for success now has shifted to individuals to have increasingly multiple credentials that they are able to earn over a lifetime of achievement in this paradigm. In the past, most higher education institutions were focused on graduates after high school, that is no longer the plan now, it is imperative that institutions keep a close watch on the K-12 enrollment and also birthrates now than ever before due to the competitive recruitment markets.

Success for students will totally rely on communication, understanding and appreciation for university, sharing and using information to solve complex problems. These new standards of what students should be able to do are simply being replaced with basic skill competencies. In order for this to happen, institutions must be willing and able to allow students to acquire creative thinking, flexible problem solving, collaboration and innovation skills in order to be successful in life.

Table 2. Top Hat List of 21st Century Skills for Learners

A shift of pedagogical teaching has caused faculty to consider 21st century skills of their students. [8] reported that the skills needed for students' success in the future are based on three areas:

1. cognitive;
2. intrapersonal;
3. interpersonal.

Teaching and learning should focus more on diversity, creativity, imagination, communication, collaboration, flexibility, motivation, critical thinking, problem solving, vision for career, and leadership for the job market. See Table 2. Top Hat List of 21st Century Skills for Learners. These are essential for the future that lies ahead. The competency based learning approach allows students to move at their own pace highlighting what they know instead of through the lens of sitting in the classroom face to face. Competency based learning is based on what students learn, and not how or when they learn.

It is a new paradigm shift that will definitely change how we think and teach our students. The approach is self monitoring, course access, and demonstration of mastery which is totally different from the research papers, assignments and assessments being done now. Students are given the time to complete the work and finish at their own pace. Students and teachers need to understand that competencies are only skills, rather than an integration of knowledge and skills and abilities.

This approach can be controversial due to the fact that faculty members lack of understanding as how to implement such an approach within a program. The bottom line is that the economy is demanding and requires higher skills for learning. These conditions correlate to the future of our students who actually received a high school diploma and need to demonstrate their learning through an array of techniques that facilitates learning in the academy. Faculty are better able to track student learning and retention through a flipped classroom model approach. The most important goal for higher education is to be able to equip students with the skills they need in order to be successful in the workforce and to most of all make an impact on the world economy.

4.2. Workforce Skill Certifications and Badges

Higher education has moved into a new era where some industry and nonacademic certifications stand out more than the diploma. Employers hiring practices reveal that they simply want more than a college degree and transcript. Alternative credentials such as other certifications from industry groups and badges endorsed by outside experts are now the norm for employment. These are cushions to the diplomas describing students' nonacademic achievement to prove the mastery of desired skills for employment.

While transcripts are becoming credentials in their own rights, colleges utilize badges to offer employers assurances about students' abilities in many ways diplomas can no longer attest to. The advantages of many of these credentials is that they are digitalized which makes them very easy to share among educators, students', and employers in formats like eportfolios or on commercial websites. The content of the credentials possesses added value because they contain claims and evidences.

4.3. Data Driven Admission College Practices

The decision of choosing which university to attend has always been regarded to be a very daunting task. What is known to date is that the college admission process has for many decades remained clearly inefficient and ineffective. The college admission process is streamlined with dates and deadlines in the admission calendar with student completion of the application as the beginning of the process. College admission directors and recruiters know now that applications are far most less useful for admitting students.

The college admission process that was once anchored on anecdotes and descriptive data is now fueled by complex statistical analysis and marketing research. To this end, all efforts are now focused on massive amount of data sourced from students earlier in the process before applications are completed.

This school of thought has driven colleges and universities to use available advances in technology to obtain from students and parents data that they make available in one form or the other. The same big data techniques that have transformed for profit industries and companies are now making her way into college admission process solely to help predict which student will be successful graduating from college. College admission review practices indicate that colleges and universities are searching for prospective students among those engaged in free massive open online courses (MOOCs). These searches on open courses enable higher education institutions to identify participating talented students completing classes equivalent to courses in their various programs.

These institutions see this approach as a safer way to recruit the cream of the crop who because of their familiarity with college work will eventually matriculate successfully in completing degree requirements. The logic is quite clear, to use big data sources to identify the spectrum of students whose prior experiences has proven that they will most

likely to be around to work their way successfully to graduation.

Also, a new emerging alternative for students whose wish is to earn a credential without all of the constraints involved into a college diploma is gaining ground. The question readily asked how can higher education institutions recruit the set of desired students who will be successful in meeting graduation requirements.

The current admission process relies on deftly organized and personalized multimedia strategies like direct mail, telephone, email, websites, mass media, social media, and mobile media. Just like big corporations and industries, colleges and universities are now turning to big data to predict who among prospective students will graduate. A student failure to complete a degree program is disruptive for both student and the institution.

4.4. Real Time Technology Driven Assessment

The emerging and evolving model for the next decade assessment in higher education is macro data and predictive analytics (otherwise known as data analytics). Big data and prescriptive analytics are taking higher education by storm. The application of data analytics to higher education setting is designed to improve persistence and outcome measures. The use of predictive analytics is driven by the unprecedented demands for accountability, efficiency, and effectiveness in the midst of constant reduced fiscal environment in which higher education institutions currently operate; the increased expectations for greater transparency and healthy competition across programs in college campuses.

Other issues facing higher education that are driving the technology assessment include outcome based funding, completion graduation rates, work force development, tight budgets, major governance changes, productivity, and flexibility for students in the institutions. Data warehouses and the cloud have made it increasingly possible for big data collection, management, and maintenance of massive number of records. Also, sophisticated technology platforms provide the computing power necessary for grinding through calculations and turning the mass numbers into meaningful and useful patterns. Indeed, such data mining uses descriptive and inferential statistical analysis such as: moving averages, correlations, and regressions, graphical analysis, market basket analysis to include tokenization to examine those patterns for actionable information.

Predictive analytics such as neural networks and decision trees on the other hand help institutions to anticipate behaviors and events. Technology to include micro and mobile technology platforms provide a viable means to the end of such gigantic quest. Higher education institutions are relatively late adopters of predictive analytics as a management tool. Predictive analytics have been used in a wide variety of business settings to manage finances, inventory, operations, assets, and resources. More recently, higher education institutions are turning to business intelligence techniques and tools for students' recruitment and management.

Perhaps, the next wave for higher education adoption of predictive analytics is in the area of institutional performance outcomes and individualized student success armed. Armed with this new technology in higher education classrooms across campuses in the United States institutions can measure student learning in real time and thus provide students and professors opportunity to review their behaviors in order to change outcomes. The new technology is driven by the information bytes being created in the classroom every minute of the day. Using predictive analytics, it is predicted that by the year 2020, 1.7 mega bytes of new information will be created every second for every human being of the planet.

4.5. Boot Camp Academy/Short Term Trainings

The sounding message from employers to recent college graduates has been and still is "when the college diploma is just the beginning and not enough". This trend has given rise to explosion in credentials. This is upending the decades' notion about the value of a college degree. The shift in the current discussion is from college diploma to creating common reference points as a way to define intellectual skills associated with a college degree. It is really a conversational shift from diplomas to credentials which delineates skills sought by employers.

The current trend has necessitated government educational agencies to lead efforts to experiment and open student aid to boot camps/short term training school seekers who pursue credentials through partnership with traditional colleges and universities already eligible for federal programs.

These lifelong university programs (boot camps/short term trainings schools) teach skills that are in high demand in the job market such as computer coding. Skills in other occupations like medical and nonmedical fields could be integrated into the lifelong university programs as higher education continue to witness seismic changes in the 21st century.

In the near future, collaborative partnerships must be the norm for a lifelong university program where higher education institutions as we know it today bench mark contents to credential college graduates as practiced in industries. Such change, when procured would provide college students more value

for their money and simultaneously ensure that they have access to life time learning economy platforms.

5. Globalization and the Future of Higher Education

There are many ways in which one would open the lens to look into globalization of higher education. It is a necessity for students to know and understand the global community. Institutions are finding creative ways to integrate course content, practicum/internships across a global perspective within the curricula of programs. In some instances, institutional programs have implemented international studies and/or global studies programs and/or coursework that can be required for the pursuit of a degree or credential/badges. Additionally, there are growing opportunities for study abroad or study away experiences so students have the opportunity to be able to be immersed within various cultural and diverse cultures around the globe.

Globalization has affected all walks of human life. To have an effective global education program it is recommended to teach about cultural and linguistic diversity, economical, political and technological advances which draws upon the experiences and areas of specialization for faculty in many disciplines. The integration of the globalization process in higher education opens the minds of students' viewpoints and challenges their thinking and that of the world at large. The opportunities assist students to obtain an appreciation for their own culture and equips them with the essential skills in order for them to triumph in a global economic world.

6. Conclusion

Students today in our institutions are more digitally literate than previous generations due to the changing demographics, diversity, and the trend of the immersion of technological rich environments. It is important for higher education programs towards the future to have a reality check. We must equip students with the digital literacy skills that would allow them to be dynamic in an ever changing work environment.

More and more demand is impacting the rising cost for an education. Higher education is considering the move towards performance based measures of students such as student access and successful completion and innovative technology. Taking this into consideration for years to come will allow students to use technology which they are already comfortable with but providing them with the ownership over their learning. It has been projected that over 80% of undergraduate students own a smartphone or tablet, today's students are expected to be able to use whatever devices that they choose to access learning, take notes, complete and submit assignments, complete projects and frequently communicate with their peers and instructors.

This process will impact how faculty update their knowledge in ways that they are able to deliver content and assess student learning in the future [1]. The world of higher education is one of the fastest changing markets ever in this ever changing global learning economy. Higher education institutions will need to work with low wealth schools and communities to advocate for increased resources in order to improve students ready for college.

Additionally, plans must be in place for low-income, first generation African American and Hispanic/Latino students who make it to college. This could possibly mean the necessity for more academic support, integration of English as a Second Language, and remedial education programs. The pertinent revolving question is will higher education institutions continue to operate with the one size fits all model for the future? Emphatically, to be successful the answer is no.

Higher education students of all categories are everywhere. Institutions must find new markets of traditional students and non-traditional students who have no degree but have some college credit. In order to recruit and graduate these students, institutions must shift their focus from merit aid to affordability, and the dedication of available resources such as money to need based aid. The faculty must be a flexible permanent workforce and institutions must resist the increased use of adjunct faculty.

Finally, the operation of future higher education institutions must be grounded in big data and predictive analytics to meet the demands of the 21st century workforce skills for students. Although the adoption of predictive analytics in higher education is relative new, but the promise is great to help institutions fix the bugs and then operate more effectively and efficiently. The implementation of predictive analytics can improve student recruitment and retention, operational effectiveness, accountability for programmatic and institutional goals, and student life.

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