



ASSOCIATION OF  
PUBLIC &  
LAND-GRANT  
UNIVERSITIES



# READY FOR JOBS, CAREERS, AND A LIFETIME

Public Research Universities  
and Credentials that Count



## **Association of Public and Land-grant Universities**

The Association of Public and Land-grant Universities (APLU) is a research, policy, and advocacy organization representing 237 public research universities, land-grant institutions, state university systems, and affiliated organizations. Founded in 1887, APLU is North America's oldest higher education association with member institutions in all 50 U.S. states, the District of Columbia, four U.S. territories, Canada, and Mexico. Annually, member campuses enroll 4.7 million undergraduates and 1.3 million graduate students, award 1.1 million degrees, employ 1.3 million faculty and staff, and conduct \$41 billion in university-based research.



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## Executive Summary

A college degree matters more than ever before. In the post-recession economy, job gains have been far better for those with college degrees than for those with only a high school degree.<sup>1</sup> Students are clear that a primary purpose for enrolling in college is to get a good job and to put themselves on a path to a successful career. Employers and the public increasingly feel that universities are not doing enough to prepare students for employment. Universities feel a degree must involve a broad education, though certainly many, probably most, in the public university community agree on the need to prepare students for employment.

Broader education and employment preparation are not mutually exclusive goals, nor have they ever been. Public universities should focus on both goals to best serve students, society, and the economy. To that end, public universities should continue, decisively and with resolve, to evolve and incorporate strategies to increase student employment and career success.

Researchers estimate that by 2020 the U.S. economy will increase by 55 million new job openings—24 million new jobs and 31 million created by baby boomer retirements.<sup>2</sup> Sixty-five percent of all jobs will require some postsecondary education and training beyond high school. Many millions of those new jobs will require college degrees that include key employment skills. Education for employment upon graduation is important, but a four-year degree should also put graduates in a better position to adapt as employment requirements change throughout their careers.

## **A Renewed Commitment and Responsiveness**

Public universities should ensure the education they provide students is responsive to the job and career needs of society in addition to the lifetime preparation needs of those students. Many institutions already excel at aligning learning and career outcomes and these successes provide great examples for higher education to improve their responsiveness (see examples under *Public and Stakeholder Opinion* on page 16).

The renewed commitment and responsiveness do not come without challenges. Institutions face a rapidly evolving economy and workforce that have resulted in increased job mobility. Universities are tasked with preparing students with skills that will serve them throughout lifetimes that may include major shifts within and across various career paths. These workforce shifts are coupled with shifting student demographics and increased demands from stakeholders for institutions to do more for students—often with decreases in state appropriations.

## **Strategies for a Renewed Commitment and Responsiveness**

Despite the challenges institutions face, many have achieved success through carefully developed strategies that seek to address our nation's workforce needs. Public universities should maintain their commitment to broad educational goals and simultaneously renew our commitment and responsiveness to students and the nation's workforce needs. This requires institutions to consider strategies to engage with at least three stakeholders: students, employers, and policymakers.

This report provides institutions with research regarding the needs facing our students, communities, and nation with attention to both the challenges and opportunities institutions will face to meet these needs. This report also urges public universities to reaffirm their commitment and responsiveness with strategies aimed at preparing students to meet the workforce and social problems of our time.

APLU will work with its members to continue development of promising and innovative strategies that prepare students for employment as we work to increase the number of graduates.



PHOTO COURTESY OF THE UNIVERSITY OF NORTH DAKOTA

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#### STUDENTS

- Develop and support instructional and course alternatives.
- Integrate and enhance service and work-based learning.
- Embed career services in a pathways approaches within traditional institutional practice.

#### EMPLOYERS

- Develop stronger university-industry partnerships.
- Build on research strengths.
- Align technology development and talent development.
- Engage with universities to develop strong internships and other experiential learning.

#### POLICYMAKERS

- Build policy using both high-quality data and student narratives.
- Develop policy partnerships through deep collaboration
- Encourage more coordination and collaboration between employers and universities



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## Introduction

A college degree matters more than ever before. In the post-recession economy, job gains have been far better for those with college degrees than for those with only a high school diploma.<sup>3</sup> Students know this—they enroll in college for the primary purpose of getting a good job and setting themselves on a path toward a successful career. Sometimes universities have shown reluctance about embracing a role in job and career preparation, rather wanting to maintain a broader focus on the value of attending college, becoming an educated citizen, and earning a degree. These are not mutually exclusive goals, nor have they ever been. But we should do a better job of tying the value of a degree to job, career, and lifetime preparation. To better serve students, society, and the economy, universities will need to focus both on creating an educated citizenry and preparing students for post-collegiate jobs and a lifelong career. Universities must ensure credentials matter and are related to the needs of our students and the broader needs of society and the economy.

Higher education has always trained students for specific careers and to take their role as citizens in society. Engineering, nursing, business administration, education, computer science, social work, occupational therapy, pharmacy, journalism, among many other disciplines all put students on academic pathways that lead directly to work and are complemented by soft and cognitive skills that come from curriculum and university experiences as a whole.

Recent trends have made it imperative for universities to re-examine how they engage with the workforce. These changes do not mean that universities must choose between their broad education mission and supporting workforce development. They must continue to do both. Trends in the economy, demographics, technology and society, however, mean that universities must undertake these roles differently than they have in the past. This paper examines this need and suggests what it might look like for universities.

### **THE SKILLS DEBATE**

College graduates have an unemployment rate of 2.5 percent,<sup>4</sup> half that of individuals with just a high school credential, and one-third the unemployment rate of those without a high school diploma. This figure is similar to the frictional unemployment rate, or the normal rate of unemployment due mostly to job transitions (approximately 2-2.5 percent), suggesting that the unemployment rate for college graduates is as low as possible.<sup>5</sup>

Yet policymakers and the public are increasingly skeptical about the value of a degree in terms of preparation of graduates for jobs and careers. Some employers point to a widening “skills gap,” or a disconnect between the degrees graduates have earned, the competencies they have developed, and the knowledge, skills, and abilities demanded by the innovation economy for a 21st century workforce. A closer look at the skills gap, however, raises more questions than it answers.

The Manpower Group’s annual Talent Shortage Survey,<sup>6</sup> which polls employers about difficulty filling jobs, reports that 40 percent of employers globally report such difficulty. The Business Roundtable (2016) conducted a similar survey of member companies, and over 50 percent of respondents reported that skills shortages are “problematic” or “very problematic.” Importantly, both the Manpower and Business Roundtable surveys dig more deeply into the types of skills (including technical and also “soft” skills like critical thinking) and occupations that are in the gap.

Institutions of higher education sometimes feel they have received mixed messages from employers about how best to prepare their graduates for the job market. While some reports indicate there are unfilled jobs that require specific technical skills, others report the top attributes employers seek are critical thinking and interpersonal skills—including leadership, teamwork, communication skills, and problem-solving.<sup>7</sup> Job postings and application

screening by employers do not always provide the best guide for identifying candidates with the actual skills required. It is critical to parse what is meant by “skills” if we are to fully understand and address the gap.<sup>8</sup>

Some studies show little evidence of a skills gap.<sup>9</sup> The studies vary in their explanations for hiring difficulties. Some suggest employers aren’t paying enough. Others claim skill gaps in one or two job sectors are being generalized across the job market as a whole.<sup>10</sup> As noted above, parsing is important if we are to get beyond the confusion. Differing claims aside, it is clearly important for universities to work to better understand the stakeholders’ needs.

In fact, engagement and improved coordination among stakeholders—whether they be community colleges, research universities, employers, government agencies, or workforce development organizations—is critical. The lack of such coordination might suggest more of an “engagement gap” than a skills gap. One report on the manufacturing skills gap notes that, “Policy recommendations should place greater emphasis on fostering communication and cooperation among networks of employers, trade associations, workforce training agencies, community

colleges, local government officials, and other key participants.”<sup>11</sup> Improved communication and collaboration are keys to success in overcoming the skills gap, and will require careful consideration of money and other resources—including data—required for success.<sup>12</sup> Many institutions are engaging with individual companies on both research and talent development efforts. But to address the engagement gap, larger-scale collaborative efforts—drawing in more partners and stakeholders to address challenges at the regional level—will be important.

Creating better linkages between students’ pursuit of a degree and their entry into jobs and careers will require getting beyond confusing data, biased interpretations, and political messaging to better understand the causes of the real and perceived disconnects. Universities must focus on developing a refined and granular understanding of the skills gap and, perhaps more importantly, turn their attention to the engagement gap to expand coordination and collaboration among many stakeholders at the regional level.

While the unemployment statistics above are encouraging, institutions of higher education remain concerned about career and job readiness for their graduates

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and for good reason. Under-employment data<sup>13</sup> and the number of unfilled positions within the job market indicate there is more work to be done in this area. A 2016 report by Pew Charitable Trust found that job categories with the highest growth are more likely to require a higher level of social, analytical, and technical skill.<sup>14</sup>

The public perception problems described here are symptoms of deeper changes related to the ways in which the value of an education has shifted with a rapidly changing world. Over the past few decades, American society and the world have witnessed significant shifts in the economy, the makeup of the workforce, demographics, and institutional roles and cultures. The transition from an industrial economy into a knowledge and innovation economy has wrought a radically different context for public higher education.

While a college degree remains important, what a college degree represents must,

as it always has, continue to evolve to meet the multiple and complex needs of our society. The nature of employment continues to shift rapidly and there is no predicting the future. However, universities can develop more nimble and agile approaches to both job and career preparation. To increase their effectiveness and fulfill their missions, public universities should ensure the education and learning that result in degrees is responsive to the job and career needs of society in addition to the lifetime preparation needs of our students. This level of preparation includes the content expertise needed for students' first and future jobs, as well as developmental capacities such as life-long learning, civic engagement, and critical thinking. In particular, public research universities should be responsive to stakeholders in society who, along with our institutions, are grappling with the implications of a continually changing economic and employment landscape.



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## A Renewed Commitment and Responsiveness

Amidst the complexity of our evolving workforce and society, a common refrain is that society has confused the purposes of higher education. Some claim that these purposes have always been preparation for jobs and careers—creating citizens who contribute to economic growth, wealth creation, and prosperity. Others react strongly to the idea that the purpose of higher education should be so individualistic and insist instead that there are much higher ideals at stake—that the purpose of higher education is to create citizens who contribute to the advancement of the public good much more broadly. This debate is not new—it has been going on for centuries.<sup>15</sup>

Today's economy demands we blur the lines and span the boundaries across these purposes—and in fact, most public institutions of higher education have constantly attended to both of these purposes throughout history as they seek to balance the individual needs of their students with the public needs of society. In the innovation economy, technology and ideas are tightly intertwined. Jobs increasingly call for *t-shaped* talent, with both deep, vertical technical expertise in a technology or set of technologies, and also broad, horizontal capacities in critical thinking and linking expertise across disciplines. To prepare such talent, universities have to overcome this concept of education as either vocational or broader education for life.

From the earliest days of American higher education, a vision of responsiveness to societal needs has shaped institutions. Higher education has been the primary social mechanism to develop citizens who can meet the evolving needs of society and the economy. To be responsive, universities and policymakers have created a system over time in which curriculum, objectives, degrees, practices, policies, and structures have diversified (e.g., growth and proliferation of subjects, programs, and credentials) to meet increasingly complex national needs (e.g., diversification of the job market, evolving technology sector, a national commitment to access). Interdisciplinarity is one example of this adaptation to address complex challenges, and more interdisciplinary curricula will likely be necessary. At the same time, universities have continually emphasized the importance of a strong core of general education elements in the curriculum, rightly noting that while specific skills and abilities are important, transferring knowledge across a lifetime of career and other contexts requires a broader portfolio of knowledge. Institutions have always aimed to achieve both goals. Any claim that demands a choice between these goals only serves to feed a debate that hinders the full realization of higher education's real purpose.

The debate is a distraction and has created friction. There is friction for students traversing the pathways from college to career, and there is friction for our institutions in navigating their relationships to employers and other stakeholders. This friction has led to a perception by some that institutions are unresponsive, either to the needs of the students they serve, or to the needs of society and the economy. One recent survey found that 67 percent of Americans believe it is “absolutely essential” students gain from college “the skills they need to get a job when they graduate,” but only 42 percent of respondents in the same survey said they believed “that college education is necessary for a person to be successful in today’s work world,” and 46 percent said they felt “a college education is a questionable investment because of high student loans and limited job opportunities.”<sup>6</sup> A primary motivation for students to obtain a postsecondary degree is directly related to employment potential; however, institutions of higher education must communicate that long-term career success requires the acquisition of many soft-skills and abilities such as working within diverse teams or developing self-moderated learning skills.

Public research universities must be responsive to the job, career, and lifetime needs of students, and responsive to stakeholders. A large number of institutions are, of course, already responsive and there are myriad examples of this. However, perceptions persist

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As part of this call for a responsiveness, we examine student pathways through higher education and entering the workforce, recognizing that these pathways are of critical importance to universities, students and their families, and employers.

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that must be addressed. In the end, institutions will no doubt benefit from efforts to become even more responsive.

As part of this call for responsiveness, it is crucial to examine student pathways through higher education and entering the workforce, recognizing that these pathways are of critical importance to universities, students and their families, and employers. Given the essential role institutions of higher education—in particular public research universities—play in talent and economic development, understanding common challenges for graduates entering or transitioning within the workforce is essential for institutions to reduce friction in pathways to needed job markets. This paper examines the primary challenges students and institutions face in navigating these pathways and offers some strategies institutions, employers, and policymakers can employ to mitigate those challenges.



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## Challenges Requiring a Renewed Commitment and Responsiveness

In calling for clarity and increased responsiveness, it is important to clearly recognize the contexts in which institutions and communities are situated. There are four key challenges facing institutions:

- trends in the economy and the workforce;
- enrollment demographics;
- institutional alignment and change; and
- public and stakeholder opinion.

Each of these warrants deeper analysis to help more clearly define the context in which universities are operating, and to scaffold strategies for increased responsiveness.

### **Trends in the Economy and the Workforce**

Today's economy and workforce are constantly evolving, which has led to far more transition across the span of workers' careers. Post-college job mobility patterns among millennials demonstrate that this new generation is likely to change jobs an average of four times in their first decade after college—a rate that is nearly double that of the previous generation.<sup>17</sup> Often people do not have one career throughout their lifetime; rather, they change jobs and even shift to entirely different sectors over the span of

their working years. Other major trends in the workforce include a shift toward a “gig economy” labor market dominated by short-term contracts and freelance work, and the rise of automation with its impact on the number and types of jobs available. These changes in the workforce and economy present unique challenges for institutions to consider how to best prepare students for success beyond their entry into the job market. Traditional models of career services and advising have focused on helping students identify and prepare for a singular career with deep engagement in a particular domain. Today’s challenges require institutions to prepare students for their first job while also prognosticating about the skills and abilities they may need in the future.

Not only are traditional career trajectories different, so too is the talent pipeline. There are now four generations in the workforce: baby boomers (born between 1946 and 1964); Generation X, (born between 1965 and 1980); millennials (born between 1981 and 1996); and centennials (born after 1996). A growing body of empirical evidence<sup>18</sup> illustrates vastly different perspectives on work and careers among the generations. Current approaches to education and career preparation within institutions are often designed for boomers (or even earlier generations), not centennials. Offerings are also largely designed for “traditional” students, just out of high school and without significant employment experience. In fact, universities serve many populations including veterans and other adults returning to college, part-time students managing a career in addition to educational pursuits, and others. Just as the content of educational offerings must be responsive at some level to industry and employer needs, so too must approaches to content and delivery be responsive to the people pursuing their education and preparation, whether they are starting or advancing their careers.

## **Enrollment Demographics**

The diversity of the talent pool readying for the job market is reflected in the changing demographics of student enrollment. Increased enrollment of diverse and underrepresented students is shifting institutional responsiveness and higher education’s ability to serve these students. A growing and significant proportion of these students comes from historically underserved populations (e.g., low-income and/or first-generation students, adult students, students of color, students with disabilities, student veterans, etc.). Compared with the student body of the past, these underrepresented students mean that our new student body has a vastly different support structure, less adequate academic preparation, and little exposure to job and

career opportunities for those with a college degree. Despite the challenges presented by shifting demographics, these diverse students bring tremendous opportunity to our institutions and to the workforce—expanding greatly our capacity for innovation, problem-solving, and representation of a broad range of ideas.

Institutions increasingly assume responsibility for better supporting students—whether in academics, financial management, or social capacity—as they matriculate, graduate, and search for employment. Developing an understanding of and responses to the needs of the variety of students in our changing demographics will yield significant gains in preparing and diversifying the existing and emerging workforce. Graduating more diverse learners and diversifying the qualified talent pool not only benefits those students, but also demonstrates responsiveness to a need often cited by employers.

## **Institutional Alignment and Change**

Challenges exist not only within the broad realms of the economy and the talent pipeline, but also within and between institutions, including not only public universities, but also other sectors of higher education and in business and industry. Aligning workforce and institutional transformation needs and curricular and programmatic assets across institutions is one part of this challenge. Institutions will serve students and the economy even better than they do now when they coordinate with other institutions of higher education, including community colleges and regional comprehensive universities, to determine the best ways to link curriculum and program offerings across types of institutions. Institutions will create better learning opportunities when they increase their efforts to engage industry as partners. Many institutions have successfully created these kinds of alignment, and should continue to expand these efforts. It is difficult—there are differences in mission and culture across sectors of higher education and between universities and employers. But when efforts to align curricula and workforce needs fail, students can become trapped in the middle.

Change is inevitable, and universities must actively lead through it. Colleges and universities are often viewed as resistant to change and path dependent—rarely deviating from standard operations and the “way things have always been done.” While institutional change may appear slow to those outside the academy, the ability for institutions to evolve has been essential to their success and deeply embedded in their organizational structures. The most effective institutional transformations



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and changes come at a high cost in terms of time and resources (both financial and personnel). Change and transformation are not only culture-dependent but capacity-dependent (e.g., leadership, data, finance, etc.). Change is often either the result of, or the cause for, specific public policies related to education and the workforce.

Significantly, the environment in which universities transform is highly restrictive, often allowing only tweaks when disruptive change is needed. Policy and assessment metrics—such as rankings—can also impede institutional change and alignment with the workforce. One example comes from the STEM fields, where faculty have argued that discipline-specific and program accreditation standards can cause a disconnect between current curriculum and the skills or abilities emerging within corresponding jobs. Arguably, current public policy and performance metrics on college and career readiness are aligned with the status quo, making it difficult to change practice without shifting policy at the same time.

Importantly, what works for some institutions may not work for others. Universities face a perennial challenge of setting sound policy and scaling what works. New mechanisms and platforms are needed for the exchange of information about “promising,” “effective,” or “best” practices.

## Public and Stakeholder Opinion

Public opinion shapes the national narrative about the ability of institutions to prepare students for the workforce. While public universities and the degree credentials they offer have enjoyed a long history of public support for higher education, the tide seems to be turning. Only 39 percent of Americans agree that college graduates are prepared for workforce success;<sup>19</sup> adding to this is the growing perception that institutions need to change in order to better meet student needs. A report from Edelman, based on its own public opinion survey, notes “academic excellence is not enough—the public expects more,” and higher education institutions “must demonstrate real-world value, both personal and societal.”<sup>20</sup>

The perceptions of business and industry must also be better understood, and here the negative perceptions are even more acute. More than half of responding employers in one survey say colleges and universities must make improvements to ensure students gain appropriate skills and knowledge needed to secure positions and advance within their company.<sup>21</sup> Taken together, such public and employer perceptions and expectations clash with higher education’s overall culture and pace. The time horizons associated with workforce standards and operations are different than the timing and outputs of higher education.

Engaging employers and the public is critical to addressing the perceptions of these stakeholders. To consider the role of public research universities in creating the talent needed for the innovation economy, and helping traditional-age students as well as incumbent workers advance, appropriate mechanisms need to be developed to ensure education offerings and strategies are responsive, as appropriate, to the needs of employers. Strategies also need to be responsive to students’ and professionals’ needs (see discussion of enrollment demographics above). Employers must also be responsive to the needs of incumbent and future workers, and through effective partnerships share the responsibility of effective job and career preparation. Only by inviting stakeholders to play a role in shaping strategies and priorities will universities be able to overcome public perception issues and bridge the engagement gap discussed above.

What does responsiveness to public and employer needs and interests look like? Take for example these winners of APLU’s Innovation and Economic Prosperity Universities awards program, which recognizes institutions excelling in engagement and responsiveness (read complete case studies online at [apl.u.org/IEPLibrary](http://apl.u.org/IEPLibrary)):

- Arizona State University's Polytechnic Campus embraces project work and partnerships with businesses and communities to engage students in real-world problem solving.
- Clemson University's International Center for Automotive Research (CU-ICAR) links companies to students and faculty for work on industry challenges, developing deep technical knowledge as well as the ability to work in teams on product development.
- Montana State University provides an innovative approach to working and learning through the Oplontis Project, engaging students in solving contemporary regional land use and social issues through archeological and museum learning about a first century village near Pompeii.
- The University of Cincinnati's collaboration with Proctor & Gamble on the UC/P&G Simulation Center brings together P&G researchers with faculty and students in experiential learning—collaborating to better understand industrial problems and to develop technical capabilities.
- The University of Houston, recognizing innovation and entrepreneurship as key competencies for the innovation economy, has created novel, cross-disciplinary and experiential learning programs to help students develop skills that not only support them in whatever career they choose, but also help the university drive innovation from lab to market.
- The University of Maryland's partnership with Northrop Grumman—the Advanced Cybersecurity Experience for Students (ACES)—is a collaboratively designed academic program that combines classroom learning with internships and other experiential learning.
- The University of Massachusetts Boston has brought together cross-sector stakeholders from education, industry, and the community to build an education-to-workforce pathway in information technology for students from underrepresented backgrounds.



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## Strategies for a Renewed Commitment and Responsiveness

Understanding the challenges institutions face is a necessary part of creating a new responsiveness, but it is only the first step. Challenges are often seemingly straightforward, but, in reality, they are complex, and require sophisticated solutions. The following strategies are offered as a starting point for institutions. Additional work will be required to identify the most effective strategies and to develop the institutional approaches needed to adapt them. Institutions should consider the following strategies as they respond to the call for a renewed commitment and responsiveness—to students and to employers. The following also includes ideas about policy approaches in support of a renewed commitment and responsiveness.

### **Renewed Commitment and Responsiveness to Students**

Understanding the shifting needs of the changing student population is imperative for institutions to effectively align learning and development with the economy and workforce. Strategies that enable institutions to be responsive to changes in student demographics, with an eye toward reducing friction in their pathway from degree to job to career, include: developing and supporting instructional and course alternatives; integrating and enhancing service and work-based learning; and embedding career services in a pathways approach within traditional institutional practice.

### Developing and supporting instructional and course alternatives:

- Expand flexible delivery mechanisms—offer courses in the evenings, on weekends, online, in hybrid formats, and in shorter terms for non-traditional students.
- Develop alternative credentialing programs—certificates, badges, and competency-based programs including those that incorporate assessments for prior learning—and strengthen the relationship between continuing education (non-credit) and traditional academic programs.
- Incorporate adaptive learning approaches—allowing students to learn on custom pathways tailored to their abilities and needed competencies.

### Integrating and enhancing service and work-based learning:

- Expand students' participation in work-and-learn opportunities, including internships, externships, co-ops, problem-based learning, and capstone projects situated in business and community contexts.

### Embedding career services in a pathways approach within traditional institutional practice:

- Shift from an approach with career services focused at the end of a students' college journey to a “career exploration” approach with services embedded within students' entire pathway.
- Facilitate partnerships between career services, faculty, and academic advising, to look for opportunities to better align support for students.
- Improve the use of data and analysis by career services and other student support professionals to help them better align student interests with promising career and skills development opportunities.
- Help faculty and other student advisors understand pathways approaches, including alternative credentialing and other options described above, to best align student goals with opportunities.

## Renewed Commitment and Responsiveness to Employers

Higher education institutions should remain committed to actively cultivating and consistently assessing college and career alignment, focusing on both the academic needs of students and the competency needs of employers. The ever-evolving nature of the student body and careers they will pursue necessitates an ever-evolving

approach to how to design and implement curriculum and credentialing. Curriculum development and program assessment should become more agile as they adjust and adapt to changing needs. Institutions can do this without losing their commitment to quality educational programs, and while maintaining a focus not only on shorter-term competencies but also on skills that will serve students over the course of their careers. Strategies for bridging the engagement gap by renewing the commitment and responsiveness to employers include: developing stronger university-industry partnerships; building on research strengths; and aligning technology and talent development.

### Developing stronger university-industry partnerships:

- Engage industry partners beyond advisory board participation—host and facilitate planning sessions in which industry partners describe competency needs and actively participate in mapping current and future curriculum to those competencies.
- Encourage industry representatives to partner with faculty members to design experiential learning opportunities, including internships, capstone projects, and other problem-based learning. These opportunities should also span K-12 and higher education. It is worth noting the U.S. Department of Education’s efforts to expand apprenticeships, including expanding how apprenticeships are defined. The recent Presidential Executive Order Expanding Apprenticeships in America (The White House, 2017), includes all experiences in which there is a “paid-work component and an educational or instructional component, wherein an individual obtains workplace-relevant knowledge and skills,” making it possible for universities and employer partners to explore a variety of new work-and-learn and experiential learning opportunities.
- Develop strategies that demonstrate the university’s interest in broad relationship development with industry—including not only talent and workforce needs identification, but also opportunities for funded and collaborative research, and joint community development opportunities.

### Building on research strengths:

- Provide opportunities for industry partners to learn about the benefits of the institution’s research and development efforts in terms of knowledge transfer, helping them see how the scientific efforts of the university help to drive better

undergraduate education and also ensure technical and scientific expertise at the graduate level.

- Within the areas of sponsored and collaborative research, institutions should ask industry sponsors and collaborators what challenges they face in developing an effective workforce—at all skill levels—in their sectors. Gaining a deeper understanding of these challenges will enable institutions to utilize the context expertise of industry partners to enrich the educational offerings for students thereby helping to mitigate these challenges.

#### Aligning technology development and talent development:

- Engage industry partners in conversations about the workforce implications of technologies being discovered in university laboratories and often developed in partnership with the private sector, taking advantage of the pre-market status of the technology to be proactive in workforce education strategy development.
- Provide opportunities for undergraduate students to get exposure to emerging technologies both in university laboratories through undergraduate research and in companies through internships, capstones, and other work-and-learn and experiential learning modes.



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## Policy Approaches to Support Renewed Commitment and Responsiveness

Policymakers are important partners in realizing the goals introduced in this report. To address the “engagement gap” described above, universities will need to partner with government in addition to enhancing their engagement with employers. Institutional leaders will need to suggest policy approaches and instruments that catalyze and disseminate solutions. In particular, institutional leaders will need to focus on building policy using both high-quality data and student narratives and developing policy partnerships through deep collaboration.

### Building policy using both high-quality data and student narratives:

- Continue to lead, and partner with the private sector, in providing high-quality data and accompanying narratives to local and state legislators. Data and narratives should provide detail about the changes in student demographics, changes in the job market, and regional economic development. They should support problem-solving for state and regional economies, illuminating both challenges and opportunities.

- Work with partners to improve, expand, and refine availability of impact measures, developing the capacity for evidence-based policymaking. Beyond describing challenges and opportunities, data and narratives must convey impact, and help institutions work with partners in government make smart investments in programs that hold most potential for scaling successful outcomes.

#### Developing policy partnerships through deep collaboration:

- Demonstrate to policymakers the value of collaboration and partnerships between and among sectors of higher education (community colleges, regional comprehensive universities, research universities) and with other actors in the education and workforce ecosystems, including industry, economic development organizations, and workforce training and support agencies.
- Collaborate on the development of policy strategies that catalyze such partnerships and network development, then co-design the right kinds of indicators and measures to demonstrate the impact of collaboration.



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## Summary and Next Steps

This paper calls for a renewed commitment and responsiveness, presents challenges that might create barriers to such renewed efforts, and offers strategies for advancing this work. University leaders are encouraged to begin or continue campus-based conversations about the challenges and strategies presented here. Which challenges are they facing and how are they overcoming them? Which strategies are they already undertaking and which will they consider adopting, or accelerating, or expanding?

In collaboration with members, APLU will continue efforts to build upon this work at institutions. APLU will begin this effort by undertaking deeper dives into some of the issues explored here. In subsequent papers and briefs, APLU will examine:

### **Data and Messages**

APLU will take a detailed look at some of the data and messaging being disseminated by universities and other stakeholders about such issues as the skills gap and student career readiness. Such information is sometimes contradictory and confusing, as described early in this paper. APLU will work to help institutions and their partners bring clarity to the issues. In particular, APLU will explore and explain data that might help institutions and the public understand issues related to skills gaps, shortages, and mismatches.

## **Students and the Workforce**

APLU has noted the shifting characteristics of both today's workforce needs and the talent pipeline represented by our students. APLU will examine in more depth some of the challenges that such shifts are presenting, with detailed examples of the ways in which public research universities are adapting.

## **Institutions and the Economy**

APLU has also described changes in the broader contexts of the innovation economy, and the ways in which institutions interact with stakeholders in this economy. APLU will present a deeper exploration of the issues that must be confronted in these broader contexts along with strategic examples of addressing job, career, and lifetime preparation needs.

Student development and cultivation of a wide array of skills and abilities enables them to be engaged citizens. Such development requires that universities renew their commitment and responsiveness not only to students but also to employers and the economy. Doing so will help students and graduates contribute in meaningful ways to the broader communities and society needs—from their first job, through their career, and for a lifetime.

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## Endnotes

- 1 Carnevale, Jayasundera, & Gulish (2015)
- 2 Carnevale, Smith, & Strohl (2013)
- 3 Carnevale, Jayasundera, & Gulish (2015)
- 4 U.S. Bureau of Labor Statistics (2016)
- 5 Dorfman (2017)
- 6 The Manpower Group's (2016)
- 7 NACE, 2016
- 8 Bessen, 2014
- 9 Abraham, 2015; Cappelli, 2015; Casselman, 2016; Sirkin, Zinser, and Rose, 2013; Weaver and Osterman, 2016
- 10 Davis and Gould, 2014
- 11 Weaver, 2014
- 12 The Economist Intelligence Unit Limited, 2014
- 13 Abel, Deitz, and Su, 2014
- 14 Pew Charitable Trust, 2016
- 15 Indeed, the very debate between higher education's focus on developing cognition vs. skills and competencies was demonstrated in the creation of the 1828 Yale Report. Tasked with this debate, Jeremiah Day—the President of Yale—and his faculty responded to their Committee of the Corporation (i.e., Board of Trustees) by arguing that it was essential for institutions of higher education to equip students with both the “discipline and the furniture of the mind,” referencing both the cultivation of a person's higher-order cognitive skills (e.g., critical thinking, problem-solving, pluralistic orientation, etc.) and their knowledge and skills (e.g., competencies, technical skills, vocational skills, etc.). The topic has been revisited again and again throughout history, including Harvard's 1945 Red Book and AAC&U's 2012 report, *A Crucible Moment: College Learning & Democracy's Future*.
- 16 Public Agenda, 2016
- 17 Berger, 2016
- 18 e.g., Twenge & Campbell, 2012
- 19 Gallup-Lumina, 2016
- 20 Weede, 2016
- 21 Hart Research Center, 2015



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