

*Prepared for:*

The Nevada System of Higher Education



# **E-Learning and Higher Education's Iron Triangle: Opportunity, Affordability, and Student Success at NSHE**

February 11, 2013

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Richard N. Katz & Associates, Inc. provides consulting and advice to institutions of higher learning and corporations that support higher education.

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## Background

In August 2012, the Nevada System of Higher Education (NSHE) contracted with Richard N. Katz & Associates (RNKA) to look at e-learning within NSHE with a view to identifying alternative strategies for enhancing student success, educational opportunity and access, and promoting student centeredness through e-learning. The strategic landscape to be considered was broad: this was to be less a study of e-learning methodology, than one of mission, structure, organization, governance, and quality.

The RNKA team – consisting of six senior professionals each with more than 20 years-experience in higher education (see Appendix) – worked with an advisory group (Committee) comprised of the chair of the NSHE-wide academic senate chairs, the president of the GBC student government, several campus leaders of academic affairs, a campus business officer, a senior representative from DRI, many of NSHE’s e-learning program directors, and representatives from the NSHE system office. The Committee convened 3 face-to-face meetings between August 2012 and February 2013 and participated in numerous phone meetings. Chancellor Dan Klaich asked former Chancellor Dr. Jane Nichols to chair this group. (See E-Learning Advisory Committee, Appendix 5)

The charge to this group was to educate the consultants about issues, opportunities, directions, strengths, and weaknesses in NSHE’s e-learning programs, to provide the consultants with a sounding board for ideas and issues that arose in the course of this engagement, to help shape the findings and recommendations, and ideally, to champion key elements of the resulting report. This is much to ask, as members of the Committee for the most part were asked to evaluate issues and opportunities from an NSHE-wide perspective rather than strictly from their familiar campus-oriented perspectives.

The RNKA team developed surveys and interview guides and read a considerable portion of the available information on e-learning at NSHE. In August and September, the team met personally with and interviewed more than 400 students, faculty, administrators, and executives from the NSHE campuses, the Desert Research Institute, the system office, and one member of the Board of Regents. Richard Katz met one time face-to-face with NSHE’s Council of Presidents and once by teleconference. Katz met as well with the NSHE student body presidents, the NSHE faculty senate chairs, and with three groups of scientists and program heads at the Desert Research Institute.

In October, 2012, the RNKA team released a summary of the themes from this interview process as the companion report *E-Learning at NSHE: Preliminary Snapshot*. November through much of January was devoted to analysis of qualitative and textual information and to writing this report. The submission of this report and the presentation of the case for change, the findings, and the recommendations to the NSHE Board of Regents complete this engagement.

## Executive Summary

### E-Learning is now strategic

There are literally scores of definitions of e-learning scattered throughout the academic and trade literature, and over the internet. Simply put, e-learning refers to learning that is accomplished over the Internet, a computer network, via CD-ROM, interactive TV, or satellite broadcast. This includes both online distance education – performed over data communication networks – and hybrid learning, which involves the blending of classroom and distance-delivered instruction. For this study, we focused in the main on the delivery of instruction beyond the bounds of the classroom and the campus. This choice was made to manage the scope of this review and does not mean to imply any inherent preferences between and among the many mature and evolving modes of technology-mediated teaching and learning.

In August 2012, the Nevada System of Higher Education (NSHE) contracted with Richard N. Katz & Associates to review e-learning strategy within NSHE. This commission was occasioned by Chancellor Dan Klaich's belief that: (1) e-learning had assumed strategic importance within NSHE; (2) changes to the NSHE funding model would create opportunities and challenges in this arena; (3) NSHE might better serve Nevadans – especially as regards educational access and student success – through more effective collaboration between NSHE institutions, and (4) new modes of e-learning delivery have the potential to dramatically alter the character, quality, accessibility, and cost of an NSHE education. Chancellor Klaich also reinforced NSHE's master planning goals of: (1) a student-focused system; and (2) opportunity and accessible education for all. Katz and his colleagues had recently helped the California State University system and the University of Texas system with similar planning efforts. Through the balance of 2012, the Katz team met with an NSHE advisory group and standing groups such as the Faculty Senate Chairs, and interviewed more than 400 members of the NSHE community. The themes identified through those interviews are summarized in a separate report, *E-Learning at NSHE: Preliminary Snapshot*.

Simply put this study has been designed to address the following questions:

- (1) How can e-learning promote the master planning goal of making the NSHE educational experience more student-centered?
- (2) How can e-learning increase NSHE educational opportunity for Nevadans? Specifically, can e-learning increase Nevadans' access to and participation in NSHE programs?
- (3) How can e-learning enhance student success? Specifically, how can e-learning promote higher rates of course completion, persistence, retention, and graduation? How can e-learning reduce time-to-degree?
- (4) How can e-learning improve the affordability of an NSHE education? Can e-learning simultaneously lower costs for students and for NSHE? How?

Not surprisingly, these questions come at a propitious time.

- Public higher education in general and NSHE in particular have been dramatically defunded in the past decade.
- Nevada suffers the nation's highest rate of unemployment and its state policy is accenting the need to diversify the Nevada economy. Such diversification depends on a highly educated workforce.
- While more Nevada high school grads are enrolling in NSHE programs, comparatively few are completing associate or baccalaureate degrees, at least not in the numbers that will be needed to supply Nevada's envisioned new economy.
- E-learning technologies and e-learning practice have matured in general and within NSHE in particular. Enrollment in online collegiate courses nationally and within NSHE is growing far faster than that in classroom-based course delivery.
- A new state funding model for NSHE presents opportunities and threats to existing e-learning programs and strategies.

## A tsunami is coming

Academic year 2012-13 may be a watershed in the history of U.S. higher education. Times in higher education are turbulent. College and university boards increasingly discuss transformational leadership, change agency, and program rationalization, while governors in several states promote the idea of a utilitarian \$10,000 4-year degree. In the past 18 months, turnover among university presidents has been unprecedented, with nearly 40 percent of all AAU public university presidents leaving their posts, many involuntarily. (Rawlings, 2012) And new modes of e-learning led Stanford University President John Hennessy to conclude: "there's a tsunami coming." (Auletta, 2012) Course redesign, massive open online courses (MOOCs), learning analytics, adaptive learning materials, and e-textbooks are changing the nature, costs, and quality of educational delivery, and the competitive dynamics of U.S. higher education.

In the fall of 2011, more than 6.7 million students in the U.S. enrolled in at least one online course. Merely a decade ago, fewer than 2 million students studied in this fashion. Frequent, rigorous, and ongoing study – culminating with a major review by the U.S. Department of Education – conclude that student learning outcomes via e-learning modes of delivery equal or surpass those obtained via face-to-face classes. One important meta-study (Bernard, et al, 2009) concludes that among three types of interaction – student with content; student with student; and student with teacher – the evidence is that increasing student-content interaction has by far the greatest effect on learning outcomes. These findings, the rising tide of online enrollments, and higher education's seeming inability to break the "iron triangle" of cost-quality-access have elevated e-learning to college and university boardrooms across the country, have attracted millions in philanthropic, publisher, and venture capital to e-learning, and have stimulated expanding ambitions among higher education's elite. On a less promising note, course completion rates among e-learners continue to lag those enrolled face-to-face, though research increasingly points to student preparedness and income levels, not pedagogy or technology as the culprits.

## When, not if

None of this should be surprising. The last decade has witnessed the transition of information and communications technologies from awkward ‘bolt-ons’ (supermarket self-check-out) to effective enablers of familiar processes (ATMs), to disruptors of companies and entire industries. Industries whose defining features include the aggregation, organization, and distribution of human talent and information content – such as newspapers, publishers, libraries, music publishers – are being disassembled and reassembled by industry giants like Apple, Amazon, and Google, or by nimble specialty providers. Private equity investors and venture philanthropists like Gates, Lumina, Hewlett, MacArthur and others are betting that higher education is among the next industries to be disrupted. They believe first, that higher education as a “bundler” of services is ripe for dis-aggregation; second, that higher education is an essential good for consumers; third, that the cost of on-ground education is outstripping the capacity of middle Americans to pay, and fourth, that technology will provide the answer.

## An e-learning vision for NSHE

Simply put, NSHE e-learning needs to serve students in the ways they want to be served. This report concludes that: (1) the need to promote educational opportunity, access, and student success, in Nevada; (2) NSHE students’ clear preferences for a radically more mobile, connected, expanded, and seamless educational experience; and (3) the competitive forces developing on NSHE’s horizon demand a greater degree of e-learning programmatic integration across NSHE. E-learning may become the dominant mode of instructional delivery throughout most NSHE campuses within a decade. NSHE students should be able to discover on-campus and online learning opportunities wherever possible on a true common course catalog across NSHE colleges and universities, enroll in these courses without regard to home campus, and to have course credit for satisfactory work accepted fully and seamlessly at the institutional and academic program levels. This report concludes that this level of programmatic integration and connectivity should be accomplished by:

- Identifying existing e-learning best practices within NSHE;
- improving and investing in existing best practices;
- identifying gaps in existing or emerging areas of practice (eTextbooks, collaborative licensing of digital library resources, learning analytics, etc.); and
- creating and sharing new common solutions and services where none yet exist.

The report does not recommend the creation of a new virtual college.

This vision – while ambitious – is in-step with the recent actions taking place throughout U.S. public higher education. California State University has created Cal State Online, the University of Texas system Regents have allocated \$50 million to create the Institute for Transformational Learning, Florida’s Board of Governors of the State University met for two days in January 2013 to craft a new comprehensive online learning policy for its state universities, and even the Regents of the University of California are “proposing the development of a systemwide catalogue of not only online courses but also all courses available to students from

campuses other than the one that originated the course.” (University of California Regents Discussion Item, 2013)

## **Standing on the shoulders of giants**

NSHE is positioned well in some ways to realize this vision, and in other ways it is challenged. First and at the core, NSHE possesses the skills and talent among its regular faculty and e-learning program staff to take e-learning to new levels of impact. Regular NSHE faculty overall are positive about e-learning and many teach online. Most NSHE institutions are deploying or plan to deploy the Quality Matters standards via self-study and peer-review – an established best practice in e-learning.

Second, NSHE students are willing and eager to study online. Enrollment in distance education courses (students taking at least one course) through NSHE colleges and universities grew 438 percent from fall 2001 to fall 2009. (NSHE Distance Education Report, 2010) As of this writing, 33,213 students enrolled in one or more DE courses representing 31.6 percent of the NSHE student body.

Third, e-learning program staff throughout NSHE institutions are knowledgeable, capable, and passionate about their responsibilities. They understand good practices and strive to adhere to good practices wherever possible.

Fourth, the collaborative and can-do spirit within NSHE is another area that merits a call out, particularly the efforts of its 2-year colleges and Nevada State College to share a common learning management system, to adopt and perfect the Quality Matters online course and program certification protocol, and other measures that will promote seamless integration across a bigger academic landscape for their students.

The e-learning strengths of NSHE colleges and universities are abundant and are responsible for undeniable and unabashed success. They have supported enrollment growth exceeding 400% in less than a decade. Students interviewed had all taken e-learning courses at their NSHE schools and colleges and all were enthusiastic about how these courses expanded their choices, made it possible for them to keep on track toward their academic goals, reduced their educational costs, made it convenient for them to fit study into already busy lives, or enabled them to remain in school at all.

## **More to do – General Recommendations**

This report concludes that the NSHE strengths in local provision of e-learning have not yet gone far enough. E-learning investments and offerings have been created by campuses, through campus budgets, with campus student beneficiaries in mind. While there certainly is significant cross enrollment, for example between UNR and TMCC (and elsewhere), we are left feeling that cross border success is largely unplanned, dependent largely on student initiative, and either grudgingly tolerated or quietly celebrated, depending on who is importing or exporting. Overall, e-learning within NSHE appears to be a collection of disparate and often beautiful fabric patches, not quite ready for quilting.

If the fragmentary nature of e-learning at NSHE and the insufficiency of current policy, marketing, technical, incentive, investment and balance-of-trade practices have failed to produce the kind of seamless, integrated “system” students everywhere now demand, it is through no fault of anyone. In fact, NSHE leaders at all levels have until now been asked to optimize campus enrollments and outcomes and have done just that – very successfully. This report therefore recommends a combination of actions that can best be described as: rationalizing, harmonizing, sharing, gap filling, and consolidating and standardizing in some cases. These measures and this vision, if adopted, will require new investment, new incentives, new policies, and new leadership and structures. Moreover, they will require new behaviors. Such changes will not be easy and NSHE leadership will need to consistently remind the community that it must now act globally to prosper locally.

The report’s recommendations touch on a wide variety of areas, but remain focused on the core actions that can be taken to: (1) enhance the student-centeredness of the NSHE student experience; (2) improve opportunity and access for NSHE students and prospective students; (3) increase student course completion, persistence, retention, and graduation rates and reduce student times to degree to better address the needs of Nevada’s evolving workforce; (4) accelerate student time-to-degree; and (5) reduce both the student costs and the institutional costs of an NSHE education.

This report’s conclusion contains many detailed recommendations. Together, these recommendations constitute an action framework and incorporate the informed thinking of people with considerable experience. That said, the external climate is changing fast and recommendations are worded in ways that make room for small modifications, reorientations, and shifts in priority as NSHE moves to implement. One recommendation however stands above the others and is made without reservation or qualification:

The Regents and Chancellor of NSHE should establish an NSHE-wide e-learning program office to be headed by a senior-level leader and supported by a vigorous and influential governance structure designed to engage top leaders, faculty, and e-learning professionals throughout NSHE and its components. The mission of this office is to work with and through NSHE’s key stakeholders and governance mechanisms to catalyze, mobilize, assure, and report on the implementation of this report’s general recommendations. Specifically, this office would:

- Coordinate an inclusive project governance process
- Convene and coordinate campus and system office working groups
- Work through a steering group to establish goals and timetables
- Develop and implement communication channels for keeping key internal and external stakeholders in the know
- Identify resource requirements and priorities
- Monitor and report on external trends and NSHE progress
- Identify key opportunity domains and address key obstacles
- Identify and evaluate partnership opportunities
- Identify and source expertise needed to create new capabilities
- Administer NSHE e-learning incentive funds
- Develop project and program performance benchmarks

Recommended areas of focus and action include:

- Convening an NSHE-wide e-learning “workshop” to both signal the significance of the topic and seriousness of leadership intent to act and to launch a planning and strategy process and timetable for action on key initiatives.
- Investing in a set of common tools, platforms, standards and policies designed to maximize student opportunity and access to equivalent course offerings regardless of the source of the offering, or location of the learner. These include:
  - Common course catalog
  - LMS platform strategy that achieves a high level of usability ‘harmony’ either through platform convergence, or through ‘managed’, rather than episodic or accidental technical ‘harmonization’
  - Standards and procedures for confirming the identity of students in e-learning courses. Shared monitoring trends in online identity authentication
  - Student e-portfolios to create a mobile, yet standardized and student-centered and student-controlled record of curricular and co-curricular activities. Over time, such portfolios will articulate with employer-based competency standards
  - Rethinking and reformulating the concept of campus service areas in the Board of Regents *Handbook* to recognize both e-learning’s inherent disregard for geographic boundaries, and a new accent on collaborating to enlarge students’ access to NSHE-wide offerings
  - Rethinking the current Regents’ policy on revenue recognition of enrollment FTEs in distance education. Current policy requires tailored costing and shared protocols that may create complexity and confound the growth of cross-campus enrollments.
- Evaluating and where needed improving articulation and credit transfer across NSHE colleges and universities.
  - Deep inclusion of faculty and student input
  - Evaluation of credit transfer at institutional level and recognition of transferred credits within academic programs
- Conducting ongoing research and assessment of the impact of network availability on NSHE participation. The needs and constraints of these students in locations like Humboldt County – if any – should be evaluated. Is lack of access to network services eroding their educational opportunities? NSHE should also get a handle on the bigger question of the extent to which limited network access keeps prospective students from considering NSHE and prevents them from ever becoming part of Nevada’s success pipeline. With study, the big problem may in fact be limited to a few opportunity zones where intervention becomes tractable. Last NSHE research should ascertain the extent to which limitations in network access owe to availability or affordability issues.
- Evaluating options, approaches and parameters for online delivery of laboratory instruction

- Identifying and prioritizing “core” services for sharing among e-learners throughout NSHE, providing incentive funds, and pooling campus resources to offer shared student services, such as:
  - Tutoring
  - Library Services
  - Writing Services
  - Disability Services
  - Call Center(s)
  - Career Counseling and Placement
  - Testing and Proctoring
  
- Identifying and prioritizing “core” services for sharing among faculty, administrative staff and campus leaders throughout NSHE, providing incentive funds, and pooling campus resources to offer shared academic services such as:
  - Course design and development. Consider consolidating instructional design and development support in Reno and Las Vegas to achieve more effective scale, smooth adoption of standards, accelerate adoption of effective practices, and enhance the career path for designers, developers, artists, and related professionals
  - Quality Matters peer review and related services
  - 360 degree profile of students like ASU’s Student 360 (with appropriate privacy controls)
  - NSHE-wide database of adjunct instructors, including information of prior student ratings and rates of course completion
  
- Investing in common marketing designed both to increase Nevadans awareness of the benefits of an NSHE education and to identify select program areas for “export”:
  - Statewide marketing messages and campaign
  - Identification of highly known, highly rated, highly specialized online courses and programs for “export”
    - GBC land surveying course
    - UNLV online nursing program
    - DRI dune morphology
  - Identification of market opportunities (developmental education, high school bridge programs, etc.)
  - Identification of target cross-border markets and marketing campaign strategies
  
- Creating and funding an NSHE-wide data resources and a learning analytics capability
  - Data models to help predict student outcomes, success and challenges
  - Tracking capabilities that flag at risk students in time to intervene
  - E-Book strategy and incentives to engage in pooled purchasing
  - NSHE-wide licensing of digital library resources
  
- Creating and funding an NSHE-wide digital learning resources/courseware strategy
  - E-textbooks
  - NSHE-wide licensing of commercially-provided digital library resources
  - Promoting awareness of open education resources options

- NSHE-wide licensing of e-learning support tools
- NSHE-wide catalog of OER and NSHE-licensed courseware tools, with links to tools, and social commerce rating system (e.g. Yelp, Trip Advisor, etc.)
- Shared repository of learning objects, both open and commercial
  
- Creating a sustainable funding model and supporting strategies for e-learning. NSHE leaders should consider:
  - Self-sustaining NSHE-sponsored general education master class program
  - Standard distance education course fees across NSHE colleges and universities
  - An NSHE “trade policy” that balances rewards for campuses that “host” students from other campuses with the reasonable needs of home campuses to regularize revenue flows from fees and tuition
  - Collaboratively funded “centers of excellence” for shared services
  - Marginal funding from e-learning fees for “gap” initiatives, such as learning analytics, adaptive learning experiments, etc.
  - Capture of savings from organizational consolidations
  - Serious discussion of modes of e-learning delivery and their differential costs and appeal to students. Enrollments in GBC’s interactive-video based courses have declined steadily since fall 2006 while GBC’s internet-based enrollments have grown 252 percent in the same period (from the same base). (GBC Fact Book Distance Education, 2012) Not only is interactive video-based programming more expensive in general, it requires students to commute to learning centers. And of course, enrollment declines generally result in lower class sizes and higher course costs, as most course costs (network, classroom, equipment, faculty, parking ...) are fixed.
  - Consideration of NSHE-wide standards to regulate the average class size of e-learning classes and sections. Average e-learning class sizes (and hence cost) appear to vary widely in NSHE. The Maryland Higher Education Commission reported average class sizes of 16.8 students per class at 16 Maryland 2-year colleges. Average class size at UMUC, Maryland’s highly-regarded distance-only institution is 24.5 students. (Maryland Higher Education Commission, 2012)
  - Philanthropic grant funding for experiments and demonstration projects
  - Capture of savings from potential large-scale public-private partnerships
  - Marginal revenue from leverage of out-of-state revenues from high profile courses and programs
  
- Creating an NSHE-wide e-learning R&D capability. Getting incrementally better at doing what you have done for years is unlikely to serve NSHE colleges and universities completely well in the years ahead. NSHE, like San Jose State and others, needs to research and to experiment to understand *on the ground* what the issues and opportunities may be associated with emerging modes of instructional delivery, like MOOCs. While the selection of experiments and research investments and the reporting of findings must be NSHE-wide, the NSHE campuses would, of necessity, be the “laboratories” for such research and instructional innovation.

## Implementation Approaches

NSHE faces a range of options to move e-learning to a new “end state” – one that further advances student success, student centeredness, access and opportunity, and affordability. The choice among options reflects foremost the resources that NSHE is likely to have, and also the institution’s capacity to rally its diverse stakeholders around a new vision of the future. As with all colleges and universities, the number of “core” implementation choices is limited:

- Augmenting the Continued Localization of E-Learning within NSHE. This strategy explicitly endorses the diverse and *ad hoc* successes (and challenges) of NSHE’s campus-based e-learning evolution and supplies additional funds to promote existing campus-based priorities like Quality Matters, LMS harmonization, etc.
- Enhancing Oversight of Localized E-Learning, and Selectively Filling Gaps. This strategy recognizes that organizational change is hard and seeks to ease into change by focusing in two areas. First, this approach would use the NSHE system’s policy compliance authority to raise the bar – especially in the areas of student success, access, and the student experience. A system-level NSHE office would review and approve campus e-learning plans and oversee annual review of campus performance against plan goals and objectives. This review would be conducted through a continuous improvement and not a compliance lens. Under this strategy as well, NSHE system level investments would be made in key opportunity domains for which there are few, if any, competing existing vesting interests. These domains include: learning analytics, e-textbook licensing, shared marketing, and NSHE-wide licensing of digital library resources or learning objects.
- Building and Operating a Shared Student-Centered, Integrated, Business and Service Core. Embrace an NSHE-wide view of the student experience and focus on the development of policies, services, and structures designed to facilitate cross-campus student mobility. The premise is that by presenting students with expanded choice and an expanded catalog of courses, programs and services, retention rates would rise, satisfaction rates would rise, campus enrollments would likely rise, and campuses would be positioned to withstand new competitive pressures. Examples of shared services might include: an NSHE-wide course catalog, tutoring, student help center/call center, counseling, career services, testing and proctoring, and so forth. This option, too, would include building new capabilities such as learning analytics as described above. This option would present students with a common set of support services and student pathways to disparately-developed courses and programs appearing under a common course numbering schema.
- Building an “e-Ncore”. To reduce e-learning quality variance, expand student access, protect and enlarge NSHE’s competitive perimeter, and lower the costs of e-learning NSHE could take the prior strategy to the next level and build on existing successes with master classes. Creating a standard course delivery template with a predictable, available, and resourced instructional design and development capability to support the development of NSHE-wide master class templates and an NSHE-wide cadre of e-Ncore instructors for the general education curriculum. Campuses would deliver e-Ncore

master courses, or continue to develop general education courses using any variety of design or development environments and styles they choose. Students taking courses developed through e-Ncore would find a predictable level of consistency and NSHE-wide credit interchangeability at potentially attractive prices. This approach has been used with great success in the University System of Georgia. This approach would also require a supporting business and service core, and the creation of new services to close gaps. E-Ncore master course templates of course would be developed through NSHE-wide faculty task groups. A revenue sharing plan would need to be developed.

- Building a Nevada Virtual College. This strategy has been pursued with great success by Penn State, Colorado State, University of Maryland and others. In essence this approach argues that thinking 'digital first' (or online only!) and eschewing the high costs of physical campus capital would lead to online educational innovation, brand clarity, and inherently superior cost structures and therefore pricing. Such an option would require new executive and administrative leadership, a separate student body, a faculty sourcing strategy, degree-granting authority, and therefore accreditation.

Not surprisingly, change is ironically hardest where incumbents have enjoyed the greatest success. This is the premise of *The Innovator's Dilemma*. The situation for NSHE is no different. Under stable conditions, we would advise that NSHE leaders tighten some bolts and fill in some white spaces in their e-learning ecosystem. The environment is not constant. NSHE budgets have suffered greatly, Nevada's hopes for its higher education system are rising, the Nevada funding formula will change the economics of online and on-ground education at NSHE, new competition is at the NSHE gates, and students will and should demand the right to have legitimate work undertaken elsewhere considered for NSHE campus course credit.

The competitive climate alone is reason for us to advise NSHE's regents and leaders to consider bold action. Through its faculty, e-learning professionals, and leadership, NSHE has come through e-learning's first wave in a strong position. NSHE colleges and universities today provide students with high quality courses, at a reasonable price. Nearly 1/3 of all NSHE students learn this way. Some are already experimenting with MOOCs. Many will. And many will expect NSHE to recognize their efforts and issue credit of MOOC work taken. NSHE – like others – will ultimately need to find a way to do this. And revenues will fall. As MOOC quality improves, more and more NSHE students will choose courses that are undeniably cheaper and that students might find better, more convenient, and so forth. There will be accredited colleges and universities that will readily accept credits transferred from the MOOCs. And the economics of institutions like NSHE will become further strained.

These dynamics alone make the case for NSHE's leaders to look toward bold action beyond steady incremental improvement.

## Time is of the essence

The January 2013 report from the President to the Board of Regents of the University of California begins with the simple statement "Online education is an idea whose time has come." Stanford President John Hennessy six months earlier said: "We know e-learning is going to be important and, in the long term, transformative to education. We don't really understand how

yet.” One prominent NSHE leader observed: “We must adapt, or become a pool of oil.” In the past 18 months:

- SUNY has announced OpenSUNY, a vision and agenda for substantial change in the organization and delivery of collegiate learning for New Yorkers
- Florida’s Regents met for two days on the heels of a major consulting study to set a new course for e-learning at that large public university system.
- Publishing giant Pearson has established a radically different college in the UK.
- California State University established Cal State Online
- Coursera, EdX, and Udacity – the MOOCs – have enrolled more than 2 million students.
- More than \$100 million in venture and philanthropic capital has flowed into alternative modes of delivering and credentialing collegiate learning.
- San Jose State University will launch a course in partnership with Udacity at 1/3 the cost of the traditional class. Proceeds will be shared between the campus and the for-profit educator.
- Private company 2U partnered to deliver online the Master of Nursing degree at Georgetown; the MBA and MPA at UNC Chapel Hill; masters of education and social work at USC; and JD at Washington University in St. Louis.

Change is happening at a breathtaking rate in higher education. Indeed, one member of the NSHE e-learning advisory committee commented: “It seems the higher education landscape has changed just in the time we have been meeting to talk about it.”

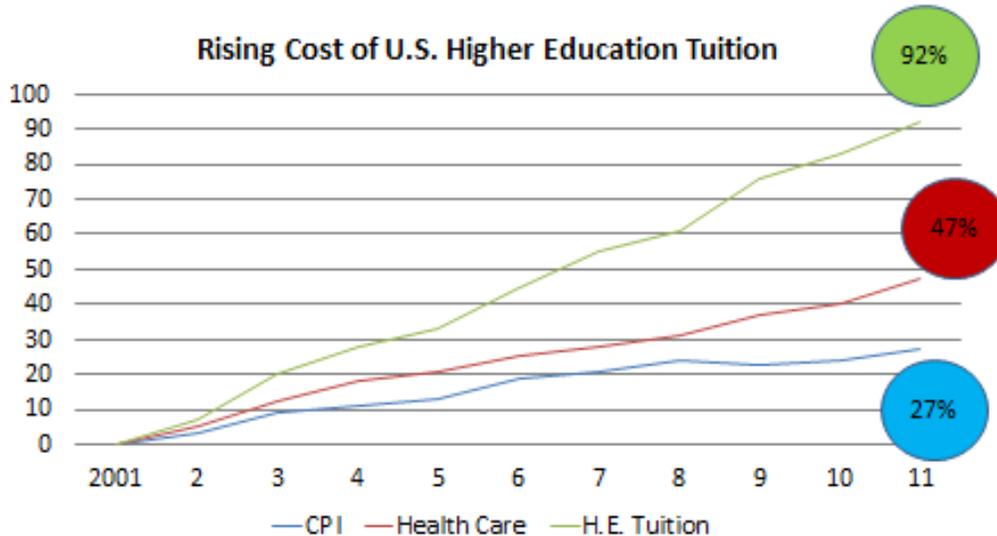
NSHE’s e-learning foundation is solid. It was designed by conscientious, visionary, and talented people to support a powerful set of campus goals. It is serving Nevadans well. E-learning, though, by definition, knows and respects no boundaries and as e-learning has matured, pedagogies, finance, and competition are changing. The highly decentralized and incremental approaches that have served Nevadans and NSHE so well must now be reinforced and supplemented at the margins through concerted and collaborative action. Individual NSHE locations will not only be competing for students with traditional providers “down the street”, and with well-funded “alternative” providers like WGU and the for-profits, but with organized and “expeditionary” providers like ASUOnline, Cal State Online, the Colorado Community Colleges Online, and increasingly MOOCs and their blue-chip members, and new providers like Georgetown, Chapel Hill, Wash U and others. Leveraging the vision of the NSHE regents and leadership, the unity and diversity of NSHE institutions, the can-do character of Nevadans and the NSHE staff, the prominent role already played by e-learning within NSHE, the system is capable of moving quickly to become a giant.

## U.S. Higher Education at the Inflection Point

### U.S. Higher Education in 2012: Not what it used to be?

The year 2012 marked the end of time on the Mayan calendar and the beginning of the new era. Historians may indeed come to view 2012 as an inflection point in the history of U.S. higher education. To many, the glass is half empty. U.S. higher education, according to *The Economist*, is “not what it used to be” (*Economist*, December 2012). This gloomy assessment reflects the fact that average university tuition now costs 38% of median U.S. household earnings, that student debt now exceeds \$1 trillion, and that 2/3 of all graduates in the U.S. now take out loans. Moreover, only 57% complete a baccalaureate in six years while the cost of that education is rising faster than any other sector of the U.S. economy. (Geiger and Heller, 2012)

**Figure 1** Tuition Costs are Rising Faster than Health Care Costs and CPI



**Source: U.S. Bureau of Labor Statistics**

Some college and university leaders counter – with justification – that their budgets are comprised largely of fixed costs of aging infrastructure, rising utility costs, and labor costs that are not easily substituted for by capital in the ways that some industries can. They go on to describe the burdens posed by poor freshman preparation and the unfunded costs of remediation, and the ever-rising burden of a mountain of regulation covering collective bargaining, access for the disabled, human subjects protection, hazardous materials handling, and the like. These costs, they argue, are large, rising, non-negotiable, and economically non-competitive. Finally, college and universities are fully aware that as enrollments shrink with the dwindling supply of prepared high school graduates, competition from traditional and new competitors is rising. To compete, many leaders feel no choice but to compete in an “arms race” of investment in new technologies, gourmet food, learning commons, recreation centers, and signature buildings. (Winston, 2000)

Futurists and enthusiasts – particularly information technologists – see higher education as a stodgy and medieval institution that is ripe for change. In particular, they are preparing the welcome mat for a legion of “outsiders” (software and hardware makers, publishers, for-profit educators, “edupunks” and “edupreneurs”) (Katz, 1999, Kamenetz, 2010)

Until 2012, the debate about the need for or prospects of a higher education transformation were largely theoretical. A dozen events that year transformed occasional forays, taunts and parries by faculty, techies, and the occasional Provost, into a sharp and purposeful public policy debate by Governors, campus Presidents, Chancellors, legislators, the U.S. Secretary of Education, and others at the “grownups table”. These events include the:

- Demonstration of the efficacy of university education at unprecedented scale
- Unprecedented mobilization of private capital into education and concurrent exit of traditional capital
- Entry of the University of Wisconsin into competency-based education
- Maturation of the open educational resources movement
- Entry of education elites into new markets
- Emergence of the American Council on Education as a 3<sup>rd</sup> party course certifier
- Maturation of new teaching practices such as course redesign and “flipped lectures”
- Student embrace of e-learning
- The ‘radicalization’ of philanthropy
- The demonstration of e-learning’s equivalent learning outcomes
- The maturation of the \$10,000 degree challenge
- The firing of the President of the University of Virginia for failure to transform the institution quickly enough

Several themes rise to the top. First is the theme of technological-pedagogical maturity. Historian David Noble labeled for-profit educators as “digital diploma mills” and decried online education as the work of the devil. (1998) Richard Katz argued that higher education must dance with the devil and that someday “star” teachers would reach tens of thousands of students online. Stanford and Pennsylvania scholars Zemsky and Massy deemed e-learning a thwarted innovation in 2004 and asked “Why did the boom in e-learning go bust?” By 2013, college enrollments in U.S. e-learning courses were increasing at rates 5-7 times those of face-to-face courses. Our finding is an important one for policy makers: the path to innovation is bumpy.

E-learning has taken root in K-12. In 2010, 30 percent of all high school students took part in online courses. Middle school participation in e-learning doubled between 2007 and 2012. (Project Tomorrow, 2012) Like collegiate, K-12 students are moving online because: (1) online courses better fit their schedules; (2) e-learning affords the opportunity for them to earn college credits; (3) e-learning allows them to review course materials as many times as they would like; and (4) e-learning makes it possible for them to take courses not offered by their schools. (Project Tomorrow, 2011) Many of NSHE’s future students are well accustomed to choice and freedom of movement across different academic landscapes.

**Figure 2 Enrollments in e-learning are growing in all education segments**

Type of Online Participation (High School)	2010	2009	2008
Took an Online Class for School	30%	18%	10%
Took an Online Class for Personal Reasons	8%	9%	4%

**Source: Project Tomorrow, 2011**

E-learning not only firmly established its *popularity* with students, but received the imprimatur of *quality* by the U.S. Department of Education, whose meta-study of learning outcomes concluded “Students in online conditions performed modestly better, on average, than those learning the same material through traditional face-to-face instruction. Learning outcomes for students who engaged in online learning exceeded those of students receiving face-to-face instruction ...” (Means, et al, 2010) E-learning instruction, however, continues to lag face-to-face instruction in course completion, an important issue for NSHE to keep in mind. Last, and importantly, the maturation of e-learning as a legitimate arrow in higher education’s quiver can be inferred from the rapid and noisy entry of higher education’s elite into the e-learning market. In a nutshell, when Harvard, MIT, Stanford, Princeton and others become e-learning providers in any form, important statements have been signaled: (1) e-learning is legitimate, and (2) brand-name universities will now compete for student attention and time in the already crowded and confusing e-learning market.

The fact that higher education seems poised at an historic moment of change, evokes and echoes Isaac Newton’s observation that “if I have seen farther, it is because I have stood on the shoulders of giants.” Indeed the changes in higher education that so many are now eager to forecast are, as Georgetown University Provost James O’Donnell reminds “already here.” O’Donnell points out that “In a hundred ways, teaching and learning in modern higher education have already undergone their sea change ... the work of innovation is hard and incremental and expensive and sometimes frustrating. Not everything works, but lots of what we try does work. And the would-be learners who come into our creaky, bricks-and-mortar disrespected institutions are the better for it. Whatever miracles the much-hyped MOOC has to offer, it would be good if more trustees and regents, and politicians and philanthropists knew how successful we already have been in a revolution whose future is now.” (O’Donnell, 2012)

O’Donnell’s point does not diminish the importance of this moment in time. Indeed, while some have carried the burden of unpopular or incredible predictions for decades, and others have worked long and hard to build the difficult, expensive, and frustrating incremental innovations, the fact is that higher education in the U.S. does not find itself at the inflection point. What emerges at the inflection point is compelling evidence that: (1) significant elements of the university teaching program can be delivered online to massive audiences; (2) regents, trustees, senior policy makers, top college and university leaders, and a wide assortment of venture capitalists, philanthropists, private equity investors, publishers, and others are making big bets

on a technology-mediated transformation(s) of higher education; and (3) traditional sources of higher education funding are themselves being transformed and in many cases, are in retreat.

On the financial front, credit rating agency Moody's earlier this year concluded that: "Weakened pricing power and enrollment pressure are impeding top line revenue growth for an increasing number of US colleges and universities ... The cumulative effects of years of depressed family income and net worth, as well as uncertain job prospects for many recent graduates, are combining to soften student market demand at current tuition prices. In addition to these economic challenges, tougher governmental scrutiny of higher education costs and disclosure practices is adding regulatory and political pressure that hinders tuition and revenue from rising at past rates. For fiscal year (FY) 2013, 18% of private university and 15% of public university respondents project a decline in net tuition revenue." (Moody's, 2013) Fully one-third of U.S. colleges and universities will be unable to generate net tuition in 2013 that keeps up with a modest 2 percent rate of inflation.

Moody's reference to "uncertain job prospects for many recent graduates" is understated. For young (21-24 year old) college graduates, the unemployment rate was 10.4 percent in 2010 and 9.4 percent in 2011, while the underemployment exceeded 19 percent in both years. (Shierholz, et al., 2012) At the inflection point, the American Dream that a college education is the admission ticket to prosperity is under scrutiny and debate. Wages too for recent graduates are under pressure: in the decade ending 2011, young U.S. college graduates saw their real hourly wages decline 5.4 percent (high school graduates' wages declined 11 percent in the same period). (Shierholz, 2012) Overall, "adjusting for inflation, graduates earned no more in 2007 than they did in 1979." (The Economist, 2013) Even MBA graduates with fewer than three years' experience saw median pay fall 4.6 percent from 2007-08 to 2012. Earnings for those MBA graduates with more experience were flat, while the average debt loads of families headed by recent graduate school graduates under 35 years old rose to nearly \$82,000. (Simon, 2013)

## E-Learning and the Slow Pace of Fast Change

Cries and hand-wringing about the demise of U.S. higher education – like the rumors of Mark Twain's death (while he was alive) – are greatly exaggerated. Such worries understate the dynamism and innovative capacity of the U.S. economy generally and of higher education specifically. While the trends described do testify to a business model that is "not what it used to be," 2012 was also the year in which the outlines of a new model came into "soft focus." The star of the show – playing the role of both hero and villain – is information technology (IT). U.S. higher education's headwinds have meant that "change is coming in a trickle of online learning *inside* universities, and a rush of massive open online courses (MOOCs) *outside* them." (The Economist, 2013) While it is important to understand the challenges facing U.S. higher education today, it is even more important to recognize how essential aspects of the sector are already undergoing significant disruption and transformation. As Provost O'Donnell argues, the sea change in U.S. higher education has been long in the making. In one decade, the number of students taking at least one online course has grown from 1.6 million in fall 2002, to 6.7 million in Fall 2011. (Allen and Seaman, 2013) Fully one-third of all students enrolled in U.S. colleges and universities are taking at least one online course and whereas general enrollments have risen less than 2.2 percent annually, online enrollments have grown annually by more than 17 percent during the same decade. (Allen and Seaman, 2013) Higher education, like so many

other industries, is witnessing both Moore’s Law – the rapid doubling of technical capabilities – and Demi Moore’s Law, the halving of that rate of change resulting from the “slow pace with which such improvement in technology translates into real impact in the industry.” (Chakravorti, 2003) That said, the 2012 Pew Internet/Elon University survey of 1,021 Internet experts, researchers, observers and users, found that 60% agreed with a statement that by 2020 “there will be *mass adoption* of teleconferencing and distance learning to leverage expert resources.”

**Figure 3 Total and Online Enrollment In Degree-granting Postsecondary Institutions, Fall 2002 through Fall 2011**

	Total Enrollment	Growth Rate of Total Enrollment	Students Taking at Least One Online Course	Online Enrollment Increase over Previous Year	Annual Growth Rate Online Enrollment	Online Enrollment as a Percent of Total Enrollment
Fall 2002	16,611,710	NA	1,602,970	NA	NA	9.6%
Fall 2003	16,911,481	1.8%	1,971,397	368,427	23.0%	11.7%
Fall 2004	17,272,043	2.1%	2,329,783	358,386	18.2%	13.9%
Fall 2005	17,487,481	1.2%	3,180,050	850,267	36.5%	18.2%
Fall 2006	17,758,872	1.6%	3,488,381	308,331	9.7%	19.6%
Fall 2007	18,248,133	2.8%	3,938,111	449,730	12.9%	21.6%
Fall 2008	19,102,811	4.7%	4,606,353	668,242	16.9%	24.1%
Fall 2009	20,427,711	6.9%	5,579,022	972,669	21.1%	27.3%
Fall 2010	21,016,126	2.9%	6,142,280	563,258	10.1%	29.2%
Fall 2011	20,994,113	-0.1%	6,714,792	572,512	9.3%	32.0%

Source: Allen and Seaman, *Changing Course*, 2013

## Breaking the Triangle: Venerable Industry in Transition

The big question for e-learning is whether or not it can break higher education’s famous iron triangle. In a nutshell, higher education’s thousand-year-old leadership dilemma has been the assumption that “quality, exclusivity, and expense necessarily go together. Under this assumption, an institution with tough admission requirements and high fees is a good institution, regardless of what happens within its walls. Under this assumption, it is futile to think that poor [States] can ever extend high-quality higher education beyond the elite.” (Daniel, et al, 2009) The evidence of e-learning’s impact on access is clear: e-learning is extending access to higher education in rural Nevada and in rural India alike. It is the most revolutionary agent of higher education access since 2-year colleges were introduced a century ago.

With regard to cost, the data is also clear, though not yet cause for celebration. The simple truth is that e-learning – done well – is more costly for the institution to produce. The reasons for this are simply, e-learning has more moving parts to acquire, assemble, integrate, master, and distribute. The teaching and learning process is already far more complex than most people

assume. What superficially appears to be the straightforward delivery of a lecture or facilitation of a lab or discussion group requires scores of steps. Some of these steps include:

**Assembling expertise:** including recruiting, assigning, monitoring and evaluating faculty.

**Packaging and classifying course knowledge:** including identifying target segments, developing curricula, designing programs, developing and maintaining courses, and evaluating and selecting course and laboratory materials.

**Approving, reviewing, maintaining, programs and curricula**

**Assembling learners:** including marketing, recruiting, evaluating, admitting, matriculating, placing, remediating, and advising students

**Delivering instruction:** including designing syllabi and rubrics, designing, collecting, tracking, and evaluating assignments, assessing grade performance and posting and recording grades, delivering lectures, facilitating small group discussions, facilitating peer interactions, and administering and proctoring exams.

**Providing academic and co-curricular support:** including assessing and classifying student needs, matching needs with appropriate institutional or extramural resources, providing counseling and advice, coaching and tutoring, monitoring and coordinating support.

**Assessing and demonstrating performance:** including student assessment, peer review, program review, and institutional accreditation.

Aside from tasks associated specifically with maintaining physical classroom and lab spaces, those working in the e-learning environment must perform all of the tasks associated with classroom based instruction, plus many additional tasks unique to e-learning. One critical task is instructional design. Not only does instructional design involve choosing a pedagogy best suited to the mode of delivery, subject matter, student profile, and the like, it involves the careful choice of technology tools and platforms and the expense of sourcing them, mastering them, and hosting and maintaining them and the data they contain.

Other activities that can expand both the scope of work and the cost of e-learning often include:

**Selection, testing, and incorporation of instructional and content tools:** including course authoring tools, lecture capture tools, learning management systems and platforms, portals, digital repositories, online testing, quizzing, and proctoring solutions, and identity management tools.

**Curation of course content:** including data management, curation of course content such as link checking and version management, and compliance with (or oversight of) rights management, including copyright clearance.

**Oversight of student uses of social and collaborative spaces:** Including student compliance with appropriate use, netiquette and other policies. Student conduct of team work and

group projects in public and private online environments, student presence and use of NSHE trademarks in public social networks, and micro-sharing sites.

**Student uses of and conduct in web conferencing and virtual worlds:** including web meetings, teleconferencing, virtual classrooms, webcasting, podcasting, screen sharing, and virtual worlds.

**Selection, management, and student use of personal productivity tools** such as document creation and hosting, spreadsheet creation and hosting, research and personal study tools, mind mapping tools, presentation creation and hosting, personal organizers, search engines and discovery, e-portfolio tools and their maintenance.

**Blogging, web, and wiki tools:** Including blogging tools, web page and web site tools, RSS feeds, polling and survey tools, and wiki tools.

The idealized e-learning instructor is the conductor of a large and varied orchestra composed of instructional designers, artists, librarians, and many others who are working to expand the student learning environment beyond what is possible inside a classroom. Of course in reality, few faculty members can possibly master even the suite of relationships they need to “light up” this kind of rich e-learning environment or to master its intricacies themselves. In many cases, they are either unaware of superior new tools, untrained in their use, or they may know of such tools, but those tools may not yet be in the college’s or university’s portfolio.

As a result, while e-learning has enormous potential – at the expense of higher costs and higher complexity – most faculty and e-learning support staff (and students!) can only absorb or support a portion of this added educational opportunity, and often simultaneously overtax themselves, raise the cost of educational delivery, and leave important benefits on the table. Perhaps the biggest example of the latter is most institution’s inability to develop or acquire the tools to really engage in learning analytics. Today, tools exist that can notify teachers and learners when material is not being read or understood and the tools can stimulate teachers and advisors when to intervene to help a struggling student. Online education and “smart” e-textbooks have the potential ultimately to place a virtual ‘learning concierge’ at the elbow of every learner. As these and other tools help students succeed without requiring faculty direct intervention, the cost of education can begin to decline.

In the near term, institutional costs of e-learning are also additive because they cannot yet realize savings associated with the reduced competition for site resources – libraries, parking, classrooms, laboratories – which generally rise or fall in stair-step fashion. While e-learning may make it possible to *avoid* future capital investments in resources like these, there is no evidence yet – for institutions with existing campuses – of real reductions stemming from closure of classroom buildings, parking structures, and so forth. And while e-learning does not reduce these institutional costs, it does increase the use of servers, networks, IT security, and licensed digital course materials. Finally, e-learning cannot in most cases lower the cost of education where the teaching practice itself is left unchanged. Many colleges and universities – including those in NSHE – limit online course or section enrollments. This practice reinforces the iron triangle and, so far, has erased (likely correctly, for now) scale economies in e-learning.

E-learning's impact on the quality leg of higher education's iron triangle is equivocal. The data on learning outcomes appears to be conclusive. Other things being equal, e-learning students in controlled studies perform as well on assessments – or slightly better – than students who take the same course face-to-face on campus. However, distance education (fully online) course completion rates lag those of face-to-face instruction by about 10 percent – nationally and within NSHE. The research indicates that low completion rates have more to do with the special challenges of low income, part time, and under prepared students, than on inherent or additional challenges of online modes of instructional delivery *per se*. (Jaggars, S., 2011)

While e-learning cannot lay claim – yet – to breaking the *institutional* iron triangle, it has in just a decade changed access, affordability, quality, convenience and a host of other aspects of a higher education – from students' perspectives. Evidence is abundant that students like e-learning modes of delivery and enjoy the benefits of flexible schedules, curtailed commutes, expanded course catalogues, and the opportunity to shop prices, teachers, and classmates over the internet. E-learning is already breaking those constraints on *their* budgets and complicated, crowded, and demanding lives.

Innovations associated with e-learning – with the right investments – could power NSHE's vision of excellence and austerity.

- Yesterday's political rhetoric of a **\$10,000 (4-year) degree** is being put to the test today in at least three states. E-learning is a central enabler of these conceptualizations. Also central is the facilitation of course credit transfer – a practice that eases the bottlenecks that slow student progress to degree attainment and lead in many cases to attrition.
- The **MOOC experiment** is focused on breaking the assumed unbreakable links between access, cost, and quality shifting the cost of education (freemium model), by fostering open global access, and by promising high educational quality at massive scale. The American Council on Education – with support from the Gates Foundation – is evaluating approaches to accrediting successful completion of a MOOC.
- The vigorous Open Educational Resources (OER) movement and commercial publisher investments in **e-textbooks** are conspiring very quickly to transform the marketplace and economics of textbook materials. Textbook expense is a significant cost factor for students and their parents. Indiana University and the University of Minnesota are partnering with commercial companies to ensure that all students have access to the learning materials at prices as much as 60 percent less than a print textbook.
- Commercial publishers and leading universities are also investing in so-called **adaptive learning technologies**. Increasingly "smart" texts use dynamic text and voice instructions to literally talk readers through the learning material pointing out the areas on which they should focus.
- Academics, philanthropies and commercial providers are investing heavily in **learning analytics**, the application of statistical techniques and so-called big data to the challenge of student success. In one famous example from the MOOCs, two thousand students submitted the same wrong answer to a question because they had misunderstood the order of two steps in a machine learning process. Course designers quickly inserted a

custom error message that flagged the error for students right away, helping them overcome their conceptual error much earlier. Only the analysis of large quantities of test data made it possible to understand and massively personalize a “teachable moment.”

- Longer term, traditional colleges and universities will **recognize competency-based learning outcomes and award credit for prior learning**. Western Governors University sets the pace with 30,000 students enrolled in December 2011, only 12 years after its establishment. In late 2012, The University of Wisconsin System announced a competency-based, self-paced learning option. The UW Flexible Option will allow students to earn college credit by demonstrating knowledge they have acquired through coursework, military training, on-the-job training, and other learning experiences. Students will make progress towards a degree by passing a series of assessments that demonstrate mastery of required knowledge and skills. U.S. Secretary of Education Arne Duncan told the *New York Times*: competency-based programs like Western Governors are the exception now, but “I want them to be the norm.”

## Minnows and Giants

The forces that are eroding the foundations of the thousand-year old higher education sector have much in common with those that are leading to the radical reconstruction of publishing, newspapers, telecommunications, music recording and distribution, libraries, motion picture distribution, television, and others. Indeed, all of these industries have these features in common:

- Incumbents are aggregators of talent and expertise (faculty, editors, musicians ...);
- Incumbents are aggregators of content (books, news reports, library holdings, film archives);
- The old business model sells ‘bundled’ services (albums, magazines, newspapers, degree programs);
- Information technologies and widespread digitization provide an alternate means of obtaining and choosing services;
- New digital competitors are free of expensive infrastructures and business practices (printing presses, physical plants, libraries, campuses ...) and enjoy enormous cost advantages over incumbents;
- New market entrants compete by un-bundling the aggregated offerings and are changing the basic competitive structure of the industry;
- Consumers love the lower costs, increased choice, convenience of online delivery, and being liberated from often unwanted bundling of services (albums, cable channels, college programs);
- New aggregators and integrators arise (Apple, Pandora, Amazon ...) to manage security, micro-payments, intellectual property rights, and the online customer experience. These entities enjoy unprecedented sales volume and lever enormous buying power;
- Online and on-ground boutique providers combine online savvy and unique knowledge of specialized products and markets and pursue market niches.

These forces are fostering minnows and giants in industry after industry (Cairncross, 1997). This pattern of disruption and change is not only clear, it is promoted as an essential element of today's leading business curricula. Higher education is unlikely to be exempt from these forces. Indeed already there is a significant "flight to quality" (Moody's, 2013), a documented propensity for the higher education research giants to garner more funding as federal budgets tighten, and an increased willingness by 'big brand' educators to flex their muscles through global alliances (Yale-National University of Singapore), members-only MOOC consortia, and other means.

At the same time, specialized institutions like tiny Chaminade University in Hawaii, or Regis University in Colorado are leaving large footprints by leveraging their geographies (Pacific Islands), religious affiliations, military base connections, academic specializations (Montessori education), and e-learning delivery know-how.

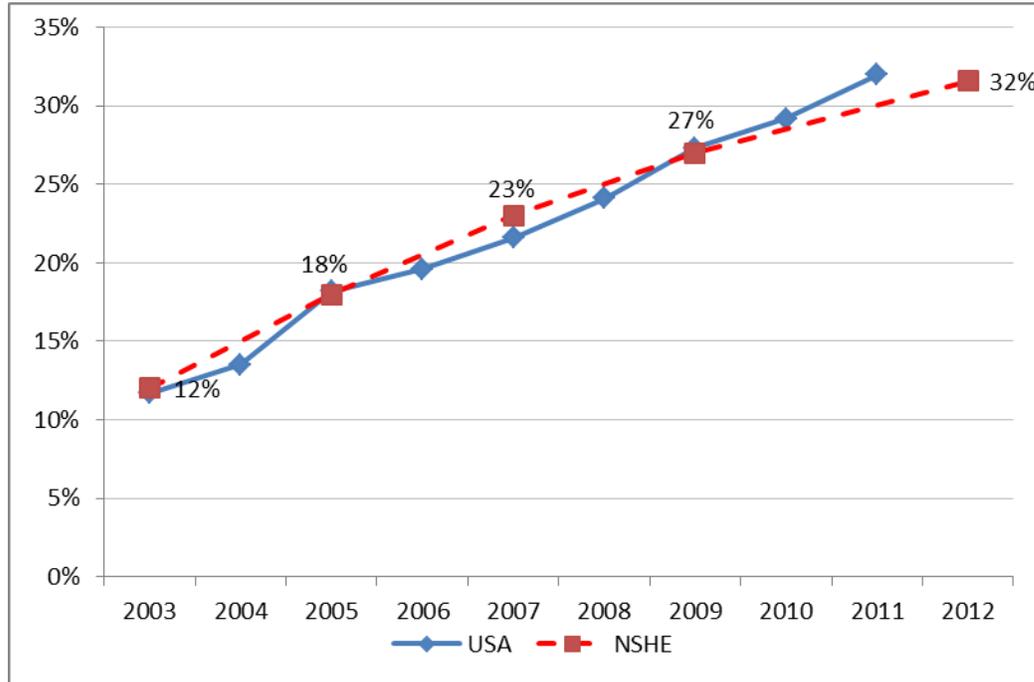
Finally, it is well known that "on the Internet, no one knows you're a dog." This lesson applies increasingly to higher education. The forces that are favoring giants and minnows are also fostering new minnows, some of whom are truly small. In a world that is increasingly focused on competencies rather than credentials, the conditions are ripe for the entry of a new class of educators – so-called "edupunks" and "edupreneurs" (Kamenetz, 2010). Just as Apple and Google have made it possible for musicians or independent film makers to by-pass traditional record labels, superstar faculty are becoming free agents (see Howard Reingold's Reingold U. or Newt U.). As the MOOCs or their successors demonstrate the star power of famous faculty and as employers and others seek to authenticate learning outcomes in ways beyond the college transcript, the power of higher-cost, bundled-services institutions to attract and retain certain kinds of students will be challenged.

These forces suggest that institutions that "go big" or "go niche" (or both) will win in higher education's future. In both cases, the means of going big or pursuing niches is e-learning.

## **Ready or Not, Here They Come**

For many students – particularly so-called NetGen students – the future is now. Enrollment growth in e-learning has been tremendous over the past decade and in less than two years, more than 2 million people have enrolled in courses supplied by the MOOC providers. Students at NSHE are no different. Students interviewed as part of this study are studying online, studying online at institutions beyond the perimeters of their home campuses, and in several cases, studying online with MOOC providers. For them, there is no drama – the emergence of unbundled education offerings online to them is as natural as their ability to select music from Apple, books from Amazon, or movies from NetFlix. NSHE students are building their own online educational experiences for a variety of reasons that are important to them. If NSHE is not able or willing to enlarge the boundaries of its current offerings, students will do it for themselves.

**Figure 4 Growth in Online Course Enrollments, 2003-2012 USA and NSHE (percent of students taking at least one fully online course)**



Sources: NSHE, Distance Education Report 2010; Allen & Seaman, Changing Course

## The NSHE Context

### Nevada in a Nutshell

#### Population, Geography and Economy

The Territory of Nevada became our 36th state in 1864. Geography plays an important role in Nevada’s history and political economy. Nevada comprises a land area of 109,781 square miles – 87% of which is controlled by the Federal government. While 7th in land area, Nevada ranks 35th in population. Knowledgeable interviewees compare Nevada to Alaska, describing a frontier land mass the size of New England dotted with small towns. This is an important, but incomplete description. Nevada is – at the same time – one of the nation’s most urban states. Fully 88% percent of Nevada’s 2.7 million people live in Clark County or Washoe County. Nearly 2/3 of the state’s population lives within one hour of the center of Las Vegas. The opportunities and challenges posed by both Nevada’s urban concentration and its vast frontier play prominently in the state’s higher education history, options, and choices.

**Figure 5 Nevada’s Population Distribution Presents Opportunities and Challenges**

Nevada Population by County from State of Nevada Statistical Map				
County	Population	Square Miles	Persons per square mile	Percent of Population
Clark	1,967,722	7,873	249.9	72.3%
Washoe	421,593	6,342	66.5	15.5%
Carson City	56,066	144	389.3	2.1%
Lyon	52,443	1,994	26.3	1.9%
Elko	49,861	17,182	2.9	1.8%
Douglas	47,661	710	67.1	1.8%
Nye	44,513	18,185	2.4	1.6%
Churchill	25,136	4,929	5.1	0.9%
Humboldt	17,135	9,648	1.8	0.6%
White Pine	10,002	8,877	1.1	0.4%
Pershing	6,847	6,009	1.1	0.3%
Lander	5,988	5,493	1.1	0.2%
Lincoln	5,284	10,635	0.5	0.2%
Mineral	4,601	3,757	1.2	0.2%
Storey	4,123	263	15.7	0.2%
Eureka	1,994	4,176	0.5	0.1%
Esmeralda	825	3,589	0.2	0.0%
<b>Nevada</b>	<b>2,721,794</b>	<b>109,806</b>	<b>24.8</b>	<b>100.0%</b>

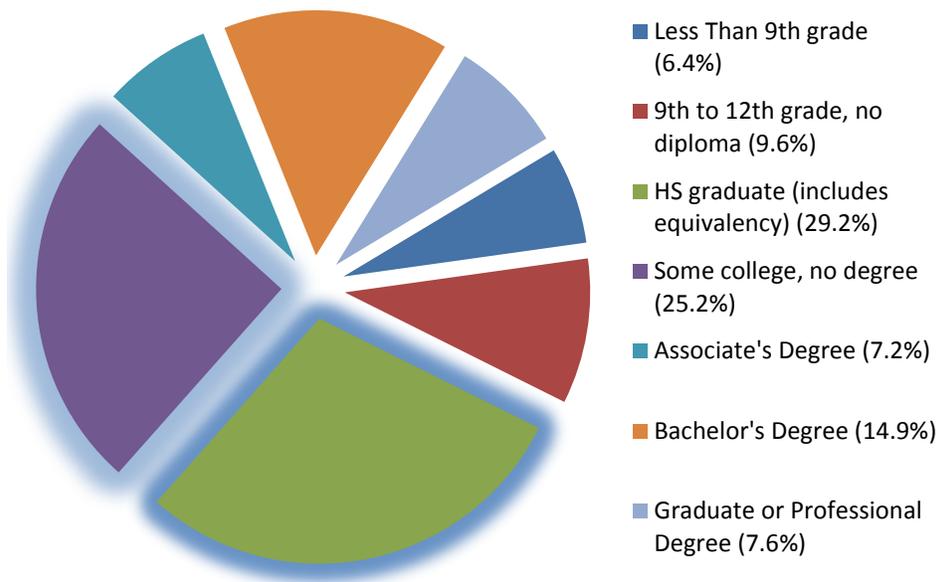
While Nevada draws attention and tourists to its mountain ranges, 20 state parks, and several national parks, the state – for good reasons – is world renowned for its hospitality and gaming. Of the 1,140,944 total jobs in Nevada in 2012, the hospitality, government, and retail sectors

accounted for 51 percent of the total. Gross gaming revenue – while now rising – was \$10.7 billion in 2011, down more than 16% from its high of \$12.8 billion in 2007. While gold mining is currently booming, Nevada’s overall lack of economic diversity contributes to its 10.2 percent rate of unemployment, highest in the continental U.S. (U.S. Bureau of Labor Statistics 2012) In 2011 the Governor's Office of Economic Development (GOED) was established, and tasked with promoting a "robust, diversified and prosperous economy in Nevada". The push to diversify and stabilize the Nevada economy factors importantly into the Nevada higher education planning landscape.

### Education in Nevada

From a current snapshot, the educational landscape in Nevada is challenging. Overall levels of educational attainment in the state lag much of the country. (U.S. Census Bureau, 2011)

**Figure 6 Educational Attainment in Nevada, 2011**

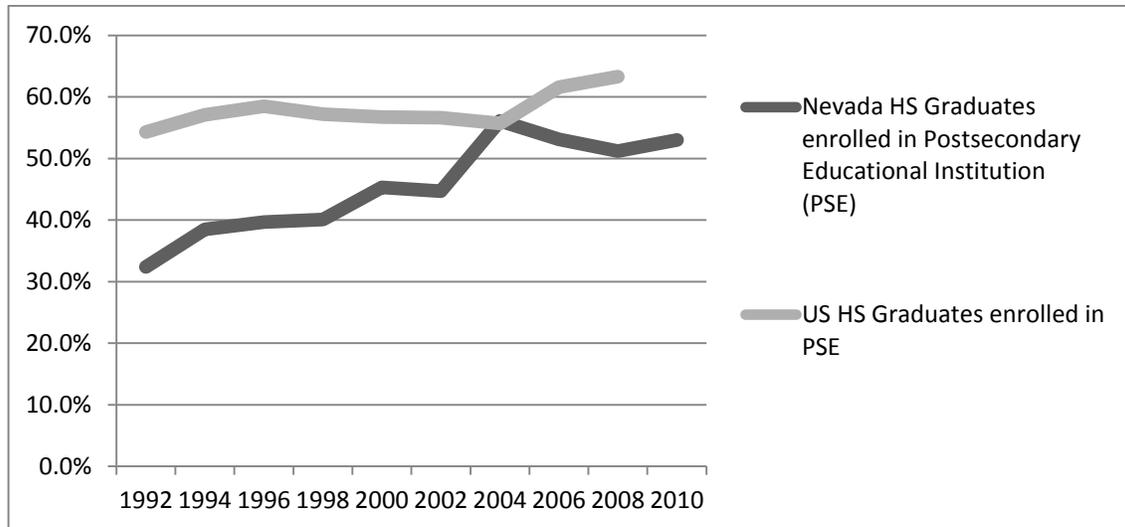


**Source: U.S. Census Bureau, 2011**

Nevadans 25 years and older hold 21 percent fewer bachelor’s or higher degrees (22.5% in Nevada as compared to 28.5% in the U.S.). While the percentage of Nevadans 25 years or older possessing a high school diploma is on par with other states (84 percent vs. 85.9 percent), the state’s 56.3 percent high school graduation rate substantially lags the U.S. average of 75.5 percent. (U.S. Department of Education, 2010) Of those who do graduate from high school in Nevada, the percentage who continue directly to postsecondary education was 53% in 2010 (NSHE Data and Reports, College Continuation Rate, 2011), substantially below the 63.3 percent nationally of high school graduates going directly to college (National Center for Higher Education Management Systems, 2010).

This static view, however, does not tell the complete story. When examined over time, Nevada is making rapid and dramatic progress in this key educational indicator.

**Figure 7 Nevada and U.S. College Continuation Rates, 1992 – 2010**



**Sources: NSHE, College Continuation Rate and NCHEMS, College-Going Rates of High School Graduates**

## Public Higher Education in Nevada: NSHE

The mission of NSHE, as stated in the Regents' Handbook, is as follows:

The mission of the Nevada System of Higher Education is to provide higher education to the citizens of the state at an excellent level of quality consistent with the state's resources. It accomplishes this mission by acquiring, transmitting, and preserving knowledge throughout the region, nation, and world. The System provides an educated and technically skilled citizenry for public service, economic growth and the general welfare, contributes to an educated and trained workforce for industry and commerce, facilitates the individual quest for personal fulfillment, and engages in research that advances both theory and practice. (Regents Handbook, 2012)

NSHE is governed by a Board of Regents comprised of 13 elected members. The Regents are responsible for the overall control of NSHE, including:

- Directing the system;
- Prescribing rules for its own government;
- Employing a Chancellor of the system and establishing personnel contract policies;
- Receiving and disbursing State appropriations;

- Accepting property in the name of the NSHE;
- Admitting students without discrimination; and
- Determining the courses of study and issue diplomas.

NSHE consists of 2 research universities, one 4-year college, four 2-year colleges and a research institute.

### Students at NSHE

Of the 53 percent of 2010 Nevada high school graduates who continued on to postsecondary education, 71 percent attend one of the NSHE institutions, 4 percent attend Nevada private institutions, and 25 percent enrolled outside of Nevada. Interviews conducted within NSHE reveal a widespread but unsubstantiated belief that the best and brightest students are leaving the state.<sup>1</sup>

Enrollments at the 7 teaching institutions at NSHE for Fall 2011, FTE and Headcount are below:

**Figure 8 NSHE Enrollments, Fall 2011**

NSHE Enrollment Fall 2011								
	Universities		4-year College	2-year Colleges				Total
Institution	UNR	UNLV	NSC	CSN	GBC	TMCC	WNC	
FTE	14,057	19,156	1,976	20,258	1,848	6,267	2,377	65,939
Headcount	18,169	26,410	3,192	38,787	3,524	11,616	4,278	105,976

**Source: NSHE Data and Reports**

The percentage of Nevada residents enrolled is high across all NSHE institutions: 92% at the 2-year colleges, 95% at the State College, and 80% at the universities. The percentage of students 18 - 24 years of age is highest at the universities (62%), and lower at the State College (40%) and the 2-year colleges (48%). The percentage of full-time students is higher at the universities (76%) as compared to the State College (38%) and the 2-year colleges (26%). This paints an unsurprising picture of the universities having a more traditional college population of young, full-time students whereas the 2-year colleges serve a broader part of the population with students varying in age and most attending college on a part-time basis.

<sup>1</sup> From an NSHE perspective, it is also important to note that there are a number of private for-profit accredited institutions operating in Nevada, including: Anthem Institute; Art Institute of Las Vegas; Career College of Northern Nevada; DeVry University; Everest College; International Academy of Design and Technology; ITT Technical Institute; Kaplan College; Le Cordon Bleu College of Culinary Arts; Morrison University; Pima Medical Institute, and the University of Phoenix.

What else is known is that among those who did enroll at an NSHE college or university, many needed help preparing for the rigors of a higher education (NSHE, 2011):

**Figure 9 Percent of Recent Nevada HS Grads Enrolled in Remedial Courses at NSHE, 2010 (2 year and 4 year)**

NSHE 2-year institutions: Percent of Recent Nevada HS Graduates Enrolled in Remedial English or Mathematics Fall and Summer 2010														
CSN			GBC			TMCC			WNC			Total		
Recent NV HS graduates enrolled in NSHE	Recent NV HS graduates enrolled in remedial courses	% of recent HS graduates enrolled in NSHE who are also in remediation	Recent NV HS graduates enrolled in NSHE	Recent NV HS graduates enrolled in remedial courses	% of recent HS graduates enrolled in NSHE who are also in remediation	Recent NV HS graduates enrolled in NSHE	Recent NV HS graduates enrolled in remedial courses	% of recent HS graduates enrolled in NSHE who are also in remediation	Recent NV HS graduates enrolled in NSHE	Recent NV HS graduates enrolled in remedial courses	% of recent HS graduates enrolled in NSHE who are also in remediation	Recent NV HS graduates enrolled in remedial courses	% of recent HS graduates enrolled in NSHE who are also in remediation	
2,767	558	20.2%	277	171	61.8%	1,075	706	65.7%	527	296	56.2%	4,646	1,731	37.3%

NSHE 4-year institutions: Percent of Recent Nevada HS Graduates Enrolled in Remedial English or Mathematics Fall and Summer 2010													
UNLV			UNR			NSC			Total				
Recent NV HS graduates enrolled in NSHE	Recent NV HS graduates enrolled in remedial courses	% of recent NV HS graduates enrolled in NSHE who are also in remedial	Recent NV HS graduates enrolled in NSHE	Recent NV HS graduates enrolled in remedial courses	% of recent HS graduates enrolled in NSHE who are also in remedial	Recent NV HS graduates enrolled in NSHE	Recent NV HS graduates enrolled in remedial courses	% of recent HS graduates enrolled in NSHE who are also in remedial	Recent NV HS graduates enrolled in NSHE	Recent NV HS graduates enrolled in remedial courses	% of recent HS graduates enrolled in NSHE who are also in remedial	Recent NV HS graduates enrolled in remedial courses	% of recent HS graduates enrolled in NSHE who are also in remedial
2,382	613	25.7%	2,034	650	32.0%	214	131	61.2%	4,416	1,263	28.6%		

**Source: NSHE Data and Reports**

Nationally, 34 percent of all new entering college students required at least one remedial education course and 43 percent of those enrolling in 2 year colleges required some remedial education. It is important to note that student collegiate preparedness, family income, and the successful completion of online courses are all correlated. (Jaggars, 2011)

Persistence rates, the percent of first-time, full-time, degree-seeking freshman entering Fall 2010 and returning to any NSHE institution in Fall 2011 - are shown below:

**Figure 10 Persistence Rates - Entering Fall 2010, Returning Fall 2011**

Persistence Rates - Entering Fall 2010, Returning Fall 2011									
	Universities			4-year College	2-year Community Colleges				
Institution	UNLV	UNR	University Total	NSC	CSN	GBC	TMCC	WNC	Community College Rate
Persistence Rate	83.4%	82.5%	83.0%	62.8%	62.2%	47.3%	69.3%	64.8%	62.8%

**Source: NSHE Data and Reports**

Graduation rates at NSHE - the percent of first-time, full-time degree-seeking students graduating within 150 percent of expected time - are below:

**Figure 11 Graduation Rates, 2009-10**

Graduation Rates - 2009-10									
	Universities			4-year College	2-year Community Colleges				
Institution	UNLV	UNR	University Total	NSC	CSN	GBC	TMCC	WNC	Community College Rate
Graduation Rate	40.6%	49.3%	44.1%	16.9%	9.0%	24.6%	16.7%	11.8%	13.2%

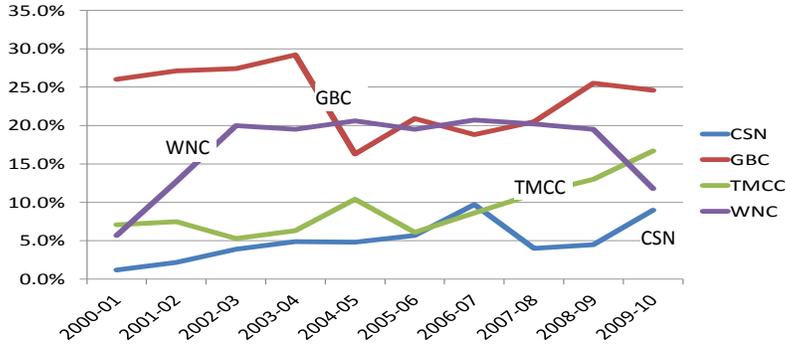
NOTE: Rates for the community colleges include certificate, associate and bachelor's awards where applicable. University and state college rates are for bachelor's degrees only.

**Source: NSHE Data and Reports**

For comparison, the U.S. average graduation rate for public two year colleges is slightly over 20%, and for public four year colleges and universities is 56%. NSHE's graduation rates lag the U.S. averages.

Graduation rates at the NSHE 2-year colleges since 2000-01 appear in the chart below.

**Figure 12 NSHE Community College Graduation Rates by College, 2000-01 to 2009-10**

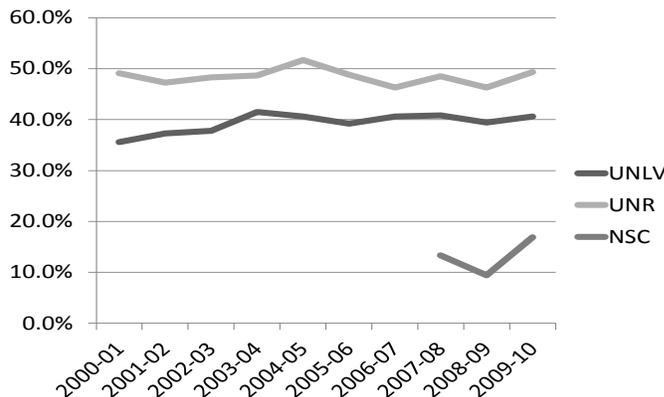


**Source NSHE Data and Reports**

Of course, whenever considering graduation rates for 2-year colleges - nationally or Nevada specifically - graduation is only one measurement. Another is transfers - how many students transferred to 4-year colleges before attaining a degree at the 2-year college? The data above does not include these types of transfers.

The graduation rates at the NSHE universities has been far more steady over time. The U.S. national average graduation rate for 4-year public colleges is 56%.

**Figure 13 NSHE 4-year Graduation Rates 2000-01 to 2009-10**



## NSHE, An Engine of Change for Nevada

The 2007 recession hit Nevada particularly hard. In his message in the State's Economic plan "Moving Nevada Forward: A Plan for Excellence in Economic Development 2012 – 2014," Governor Brian Sandoval stated "For nearly 150 years, Nevada has seen more than its share of economic booms and busts. From mineral extraction to tourism and gaming entertainment to residential and commercial construction, our economic model has historically relied heavily on consumption-based industries. As a result, the recent Great Recession hit us harder than any other state."

NSHE is understood to be an important partner in Nevada's future economic development – both as a research partner with industry, and as a developer of Nevada's future skilled workforce. Moving Nevada Forward, the report continues, will "require a strong partnership between the State's educational system and workforce training programs. Nevadans must have the education and skills necessary to fill high-quality jobs. Our future success depends on developing and sustaining an excellent and efficient education system that is aligned with the programs that develop skill sets with the sectors that produce jobs."

In a nutshell, we find the context for NSHE and for e-learning at NSHE to be both challenged and challenging. NSHE's inheritance includes, on one hand, an under-prepared student body, declining short-term enrollments owing to a deep and long recession, four years of deep cuts in state support, and an expectation that the system will be an engine of hope, change and prosperity for Nevadans everywhere. On the other hand we are struck by the resourcefulness, goodwill, and self-reliance of the members of the NSHE community we had the pleasure to meet. In a gambling state, these are not people you would care to bet against.

E-learning has been a game changer for NSHE and for Nevada and is an essential leg of the stool that supports Nevada's rising ambitions for economic diversity, growth, and prosperity. Nevadans and members of the NSHE Board and community understand that excellence at NSHE must be achieved with austerity. It is a tall order, but one that is likely to foster innovation in e-learning in large quantities.

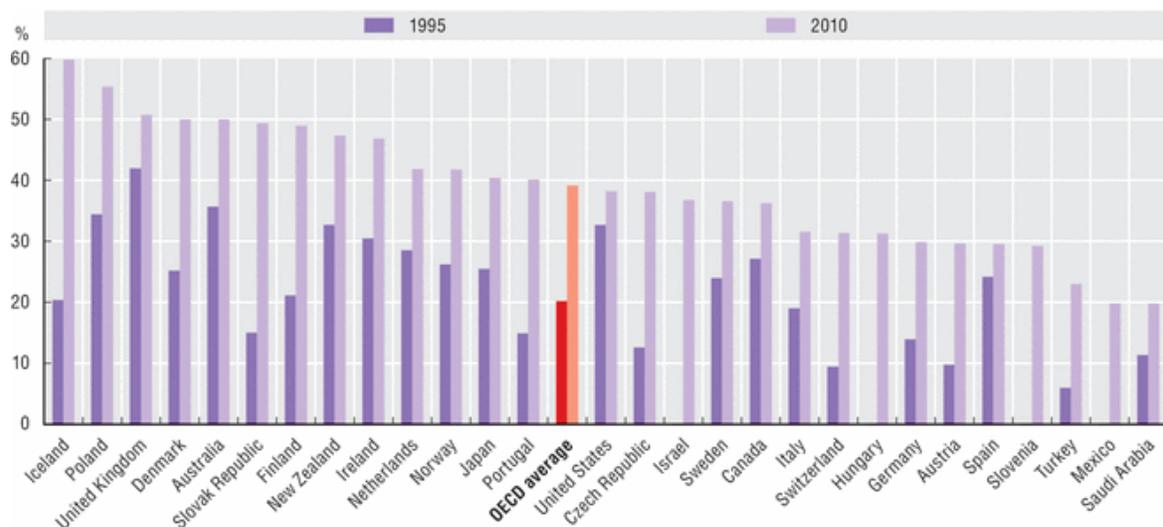
## E-learning and Higher Education’s Iron Triangle

### E-Learning and Student Success

Student success – from course completion to successful persistence into the second year of study, to retention, to graduation in a reasonable time frame – has become the *sine qua non* of public higher education. And for good reason. Of the 2.4 million freshman enrolled in 3,800 U.S. colleges and universities in 2004, only 1.02 million or 23.7% are known to have received 2-year or 4-year degrees by 2010. (Chronicle of Higher Education, 2010) While 1.2 million of those freshmen were not tracked and are not counted, fully 1.2 million entering freshman did not graduate. The percentage of U.S. first time graduates of university-level education in 1995 ranked among the top four in the world, and slipped to number 14 by 2010.

The reasons for the U.S. decline in a variety of world rankings are complex. It is likely that one reason that may be particularly important to NSHE is the very significant decrease in the share of a public higher education’s cost borne by state governments. Shifting more and more of higher education’s burden to students and parents carries risk. Graduation rates among those whose incomes are in the institution’s bottom quartile – those already most at risk – “decline steadily as the net price (of a college or university education) rises.” Apparently, “each \$1,000 increase in net price is associated with a three percentage point decline in the six-year graduation rate.” (Chingos and McPherson, 2010) Gross price increases at NSHE have ranged from more than \$800 at the 2-year colleges to nearly \$2,600 annually at UNR and UNLV. Socio-economic factors even far outweigh preparedness where it comes to succeeding at college. (Chingos and McPherson, 2010)

**Figure 14** Percentage of first-time graduates from university-level education, 1995 and 2010



Source: OECD (2012), *Education at a Glance 2012*, Table A3.2, at: <http://dx.doi.org/10.1787/888932664575>.

Information technologies (IT) have made this very complicated topic even more complicated. First, it is undeniable that e-learning has increased opportunity and access to higher education in the U.S. Students who otherwise might never enroll in, nor complete a college or university education for geographic, financial, scheduling, physical accessibility, or other reasons are engaging in college and university coursework in great numbers. With every expansion of participation, higher education's doors are opened wider to people of varying backgrounds, with varying levels of participation. While the evidence is now compelling that – other things being equal – e-learning modes of delivery produce equivalent or superior learning outcomes, it is also evident that e-learning modes of instruction suffer higher rates of attrition. By opening higher education's doors wider, e-learning has not only made college and university opportunity available to greater numbers of students who are under prepared for the demands of a collegiate curriculum, but also to those whose technology skills may be inadequate, or whose access to technology tools – broadband internet, up-to-date-computer – may be limited. In one study, problems with IT accounted for 70 percent of the reasons given for course attrition. (Zavarella, 2008)

The effect of adding greater numbers of 'at risk' students to the U.S. higher education pool via e-learning is that completion rates for courses delivered fully online lag those delivered face-to-face, or in hybrid or blended delivery modes. As more states move toward funding models designed to reward completion rather than enrollment, as federal funding rewards completion or sanctions attrition, and as student enrollment preferences continue to favor e-learning, a collision course is being plotted. Indeed, the largest scan of the literature on online learning effectiveness concludes: "... much of the postsecondary reform agenda promulgated by major foundations, as well as by the current administration, is focused explicitly on improving the probability of success for students after they first enroll. Does online learning meet these goals? For well-prepared and motivated students, perhaps it does; the Department of Education meta-analysis demonstrates that online coursework does no harm to this population, and online education clearly offers these students the benefit of convenience and flexibility in the location and scheduling of their studies. For low-income and underprepared students, however, an expansion of online education may not substantially improve access and may undercut academic success and progression through school." (Jaggars and Bailey, 2010)

Five key shifts or areas of investment are likely to avert a collision:

- Student preparation
- Faculty preparation
- Changing pedagogy and instructional design
- Learning analytics
- Adaptive learning

### **Student Preparation**

While as stated earlier, socio-economics trump preparedness where student success is concerned, it is outside the scope of this work to propose solutions to these vexing and complex problems. That said, there are clear links between a student's income conditions and their levels of preparation. While the growth of a variety of e-learning modes of delivery in use

throughout K-12 education is dramatic, their availability and use is highest in affluent school districts and by students whose families can afford computers and broadband connections at home.

There is a wide variety of interventions large and small that institutions can consider for helping students clear the preparedness hurdle. Many are in use today in NSHE colleges and universities and many are demonstrably effective.

1. Completion of a student e-learning self-assessment. Common themes comprising the self-assessment include:
  - *Personal and Academic Attributes* – helping the student understand his or her history of success with academic pursuits as well as his or her perceived ability to perform well academically. One’s prior academic history is a strong indicator that one will or will not experience academic challenges.
    - *Help Seeking* reflects a student’s willingness to ask for help when he or she encounters a problem. Assessments can help gauge a student’s comfort level seeking help and the likelihood that when the student experiences problems in online courses, he or she will seek help soon.
    - *Persistence* – is there a pattern of course incompleteness in e-learning courses?
    - *Procrastination*
    - *Time Management*
    - *Locus of Control and Self Direction* questions can surface the degree to which a student feels in control of what happens to him or her. People with a high (internal) locus of control believe that their experiences are controlled by their own skill or efforts. Many online courses require the student to take initiative in the learning process, making this a meaningful predictor.
    - *Self-Discipline*
    - *Study Habits*
    - *Learning Preference* (Aural, Verbal/Text, Visual, Tactile Kinesthetic)
    - *Motivation* (job? money? personal knowledge?)
  - *Academic Literacies and Technical Competencies*, such as
    - Using the LMS and key course tools (e-mail, texting, chat, YouTube)
    - Reading, comprehending, and typing online
    - “Netiquette”
    - Managing Files and File Formats
    - Web Browsing and Searching
    - Getting Online and Library Support
    - Downloading Files
    - Communication and Social Interaction
    - Avoiding Plagiarism and Intellectual Property Violations
  - Accessibility and Americans with Disabilities Requirements

- Technology Equipment Capability
2. Completion of an e-learning preparedness course. Many schools like Michigan's Mott Community College require students to complete a no credit, no cost e-learning preparedness course before they can register for any e-learning, web-based learning, or hybrid course offered at the College.
  3. Restrictions on participation. Some colleges and universities do not allow students on academic probation to enroll in any e-learning sections. Some (but few) institutions restrict the number of e-learning courses that a student may enroll in, in a given academic period or term. Many campuses extend their policies regarding on-campus residency to balance e-learning and 'on-ground' experiences.
  4. Completion of a course orientation. The e-learner goes through several stages of preparation before engaging the class content. This includes acclimatizing to the virtual classroom, software, instructor and then finally the content. Different students will enter a course at different levels of preparedness in online courses. Level setting and calibrating students' orientation is a more demanding responsibility in the e-learning context.

### **Faculty Preparation**

A recent and important study concluded that “Professors, over all, cast a skeptical eye on the learning outcomes for online education. Nearly two-thirds say they believe that the learning outcomes for an online course are inferior or somewhat inferior to those for a comparable face-to-face course. Most of the remaining faculty members report that the two have comparable outcomes. Even among those with a strong vested interest in online education – faculty members who are currently teaching online courses – considerable concern remains about the quality of the learning outcomes.” (Allen and Seaman, 2012) While our interviews at NSHE colleges and universities confirmed this bias among some of NSHE's faculty, we found that most faculty had open minds on the subject of e-learning's value and probable rigor, and many taught online regularly. Some of our interviewees in fact preferred e-learning to conventional classroom teaching. This is a strength within NSHE.

Open-mindedness, of course, does not always lead to mastery or even comfort and our review of the literature and our interviews suggest that – like everywhere – NSHE faculty engaged in e-learning acquire their skills from a mix of do-it-yourself trials, informal peer coaching, and formal instruction. As a result, many teach online, but few report being not only comfortable, but fluent enough to use a significant portion of the capabilities at their disposal. This finding is nearly universal in higher education and in our judgment reflects the informality with which collegiate and university instruction is acculturated on the ground. That said, the absence of sufficient faculty training, we believe, will impede NSHE's efforts to really improve the student experience and student success and reduce the institution's return on investment in those areas such as adaptive learning, digital object repositories, e-books and others, recommended here. In the past decade, students participating in the ECAR studies of undergraduate students and IT

identify lack of faculty technology preparation as the biggest barrier to their satisfaction with technology-mediated instruction.

Even more, our interviews lead us to conclude that NSHE commitments to and investments in e-learning are being risked by the widespread use of adjunct faculty in general education courses and by the uneven preparation of these adjuncts in good e-learning practice, in the campus e-learning environment and tools, and so forth. We heard frequent reports of class sections being added “on the fly” using adjuncts who were unprepared to teach the course. We recommend that this area of risk be studied within NSHE. A rapid assessment of overall student satisfaction levels in general education courses taught by adjunct faculty might confirm, dis-confirm, and/or illuminate this area of concern.

There is a significant literature of good practice in this area, and thus, this is one area where money really can address the issue. NSHE’s e-learning professionals know the good areas of practice in faculty preparation and should play a significant role in crafting solutions. If the primary recommendations of this report are adopted, NSHE will build an e-learning superhighway. Failing to help teachers learn to drive – or maybe even to drive fast on the Porsche test track – will limit the impact of some of the far more expensive elements in the NSHE e-learning ecosystem.

### **Changing Pedagogy and Instructional Design**

The past two decades represent a time of significant experimentation with course design and the application of new educational theory in higher education. Medical education has nearly everywhere embraced problem-based learning as a recent educational delivery construct, and many schools of engineering now feature design-based learning prominently within their teaching repertoires. The EDUCAUSE National Learning Infrastructure Initiative and later the Center for Academic Transformation pioneered substantial work on course redesign building on remarkable successes at Virginia Tech, MIT, and elsewhere, where so-called studio physics and the Math Emporium replaced traditional lecture theatres with open learning environments in which teachers rotated among students needing coaching. These innovations along with a remarkable decline in the cost of video capture and in networked transmission of digital video content have led to a recent innovation described as the flipped lecture. At Stanford University, students in computer science who took classes using the flipped lecture format overwhelmingly preferred their classes to counterparts who had taken the same classes in the traditional mode of delivery. Moreover, students in “flipped” lectures performed better on comparable assessments. In 2011, this core work at Stanford led Stanford President Hennessy to authorize the conversion of Stanford’s year one biology curriculum to the new delivery mode, and led Professor Sebastian Thrun to offer his course in artificial intelligence to “all comers” over the internet – at no charge. More than 100,000 students enrolled, and the so-called Massive, Open, Online Course (MOOC), became higher education pedagogy’s cause celebre, or *bête noire*, depending on your viewpoint. Since Fall 2011, more than 2 million students have enrolled in free courses of this kind via Coursera and Udacity – which arose from Stanford’s origins, and from EdX – arising from Harvard and MIT. This decade as well has witnessed the emergence of Khan Academy – another form of technology-mediated learning. This mode of delivery is changing pedagogies and teaching styles in large pockets of K-12 education.

## Learning Analytics

According to Arizona State University President Michael Crow, “The thing we are missing right now is a clear focus on our underperformance as a sector. “... the sector is grossly underperforming. It needs a set of significant tools put in place to help it perform better. If institutions became focused on performance and on the use of analytics at every level to both measure and enhance performance, these technologies would naturally be put to work. “They’re the means by which we can know exactly where we are.” (EDUCAUSE Review, 2012) Analytics use large quantities of data and the techniques of statistical analysis and model building to answer two critical questions: (1) how are our students doing?, and (2) how can we intervene to make them successful?

The use of learning analytics is helping some colleges and universities understand which students are likely to accept an offer of admission to more accurately predict and plan for the size and nature of the entering class and to manage admissions yield. Others are using analytics to help faculty and counselors understand which admitted students might have academic risks, or which are likeliest to graduate in 4, 5 or 6 years. Analytics reveals the relative importance of different risk factors – high school GPA, family educational attainment, test score performance, size of Pell Grants, and so forth even to a student’s level of preparation on any given day. This information, Crow says, makes it possible for faculty, counseling staff, and others to ask: “How are they advancing? How are they moving toward their goals? How might additional resources or additional assets or additional analytical tools or additional decision-making tools help them to be more successful?” These tools when tied to an effective network of institutional interventions through a system of alerts makes it possible for institutions to demonstrate both knowledge of and care for its students – even on a massive scale or in the disembodied world of e-learning. Most of us may remember the time when a gentle and concerned outreach from an adviser or faculty member provided direction or encouragement at just the right time, or alternatively we likely all know friends who dropped out for reasons that might have been addressed, if someone influential had known, or intervened.

The NSHE regents have identified enhancing student success within NSHE’s colleges and universities as job one. Crow agrees: “I think the number-one thing we need to do is to focus on our own performance and the need to enhance student success. There are no more excuses.” He, and an increasing cadre of others believe that in large non-elite institutions, learning analytics is an important answer: “If you use these analytical tools, you will know where you are, you will know what you’re doing, you will know if what you are doing is working or not, and therefore you will know whether or not you need to be doing new things customized to fit your particular school or your particular demographic to be successful.”

## Adaptive Learning

Adaptive learning – known also as personalized tutoring, personalized learning, smart content, and a variety of other names grew out of the early work on artificial intelligence taking place at MIT and elsewhere in the 1970s. The pedagogical premise of adaptive learning is that learning improves if technologies can be organized in ways that transform the learner from a passive receptor of information to a collaborator in the educational process. Progress toward developing adaptive learning tools and texts is progressing rapidly. For example, from the student perspective, colleges, universities, publishers, MOOCs and others are gathering pools of

questions and are rating them according to difficulty. By interpolating between easier and harder questions, a computer can ascertain a learner's maximum and minimum possible skill levels. These levels can be adjusted to the level of the difficulty of the question, re-scored, and re-iterated – each time providing a more and more accurate assessment of the learner's comprehension and level of subject mastery. Computers are now being programmed as well to analyze incorrect answers to questions. This information is being used by MOOCs today – because of their access to large testing datasets, they are able to uncover systemic misunderstandings by students of concepts in a given course or sub-unit of knowledge, and thereafter to “adapt” the instruction to rectify the students' collective misunderstanding.

E-learning professionals – including some within NSHE – are now incorporating aspects of adaptive learning to implement intelligent dynamic behavior in the learning environment. While e-learners are learning a new concept, they are tested on their abilities. Mining databases of student answers, student progress is tracked using so-called cognitive scaffolds – individualized or personalized assessment “paths” based on the learner's tested cognitive abilities. Other forms of adaptive learning are being used to perform automated grouping of learners with the same interests into study groups or other academic team-based activities, and to personalize links to information sources based on the learner's stated interests or web surfing habits.

In the simplest terms, adaptive learning strives to use the power of computers and lots of student test performance or behavior tracking information to assess a learner's academic progress. Is the learner reading the required material? Is the learner grasping the concepts? Which concepts are posing problems? Is the student engaging with the course material and with peer learners? And so forth. In most cases, failures to engage or master tasks and concepts, or to engage in team-based work, triggers calibrations in assignments, or alerts to faculty, so that informed interventions can be crafted – personalized again for the individual learner.

In time, these technologies are expected to become equivalent to having a skilled and dedicated personal tutor ... in your phone, on your desktop, or wherever networked computer intelligence can be found. Adaptive learning has the potential to liberate faculty from much of the mundane and somewhat mysterious aspects of student coaching and to better calibrate the span of abilities within classes – and to close personal gaps, and group disconnects. These capabilities are particularly essential in the disembodied world of fully online e-learning.

## **E-Learning and Access**

As the NSHE distance education directors pointed out in September 2010, “Distance education programs focus on improving access to higher education. As this method of instructional delivery matures, it is a viable option for working adults, active duty military personnel, public safety (fire, police, EMT), and allied health professionals as well as for those in remote/rural areas, students with young children, traditional students seeking to maximize their class schedules, and those with accessibility needs.” (NSHE Distance Education Report, 2010)

Indeed, e-learning is opening higher education's doors to the widest possible extent.

Among the most important (if least recognized) factors in the amazing growth in higher education attainment following World War II was the spread of car ownership that made students more mobile than ever before. Students and institutions alike benefitted enormously from falling car prices and public investments that made it possible to use automobiles to go more places in greater numbers. Colleges and universities weren't just passive beneficiaries, either: they revamped programs and campuses to serve the new "commuter" students and came to accept (no doubt with much ambivalence) the management challenges and public policy involvements that came with offering commuter-friendly study.

Today Nevada's best chance of achieving new levels of educational attainment statewide (and of taking some pressure off of the traffic grid!) lies along the information superhighway. Growing much faster in enrollments than campus-based learning, and growing rapidly as well in richness of content and variety of forms, e-learning is emerging as the great educational opportunity factor of the twenty-first century. We do not see any way that Nevada can achieve its goals of a diversified economy and significantly more educated workforce without a large, vibrant e-learning delivery component. Nor can NSHE meet its mission of giving Nevadans the widest possible access to higher education, or its goals of diversity and inclusion, without corresponding openness of, and access to, digital resources.

No doubt much the same could be said of systems of higher education all around the country and the world, but Nevada's special circumstances make it particularly important that the state's residents have access to the networks, tools, and skills that are increasingly prerequisites to educational opportunity. Establishing this precondition for online success will require that NSHE work with governments and commercial partners to:

- **Improve the availability of consumer broadband service** to Nevada's rural and tribal communities;
- **Help make digital services and products more affordable** for lower-income Nevadans and communities; and
- **Close the digital skills gap** through outreach and digital literacy programs.

We examine each of these options in detail in the remainder of this section.

### **Availability of Consumer Broadband Service**

It's a critical advantage for the future of e-learning at NSHE that the state of Nevada has a good story to tell about broadband availability—a good story which, however, contains a major plot twist. According to the broadband advocacy organization Connect Nevada, 97% of Nevada households have access to terrestrial broadband connectivity advertised at 3 mbps or higher speeds. (Connect Nevada, 2013) Even in rural areas, 95% of households have access to at least basic (768 kbps) connectivity. Especially in rural areas, much progress has taken place just over the past few years, often thanks to development projects funded by federal ARRA stimulus funds. In Eureka county, availability rose from 24% to 84% of households between 2010 and

2012. Much larger Elko county rose from 78% to 94%, nearly all of it at 3 mbps or faster speeds. And all of these figures somewhat understate potential connectivity because they do not include mobile wireless or satellite services.

**Figure 15 Availability of Broadband Service by County (Excluding Mobile/Satellite)**

County	Household Density (per sq mile)	Number of Households	Households served % (768 Kb+)	Households served % (3 Mb+)
Churchill	1.9	9,671	97.7	97.7
Clark	88.8	715,365	99.7	97.9
Douglas	26.5	19,638	99.3	97.6
Elko	1.0	17,442	94.2	90.7
Esmeralda	0.1	389	42.0	42.0
Eureka	0.2	836	84.1	29.9
Humboldt	0.7	6,289	96.1	56.3
Lander	0.4	2,213	83.6	79.8
Lincoln	0.2	1,988	97.6	97.6
Lyon	9.8	19,808	99.7	98.5
Mineral	0.6	2,240	96.6	83.4
Nye	1.0	18,032	93.8	93.1
Pershing	0.3	2,018	84.1	62.4
Storey	6.6	1,742	92.9	70.0
Washoe	24.9	163,445	98.5	98.0
White Pine	0.4	3,707	88.0	26.9
Carson City	135.9	21,427	99.9	99.9

Source: Connect Nevada, November 2012

This good news carries a few complications, however. As Figure 15 shows, five rural Nevada counties (Esmeralda, Eureka, Lander, Pershing, and White Pine) have availability rates below 90%. Overall, Connect Nevada estimates that some 6000 households lack access to fixed broadband service. Of greater practical significance for e-learning, much rural connectivity remains below the 3 mbps speed level, making today's e-learning less satisfactory and tomorrow's richer e-learning potentially unsupportable. Alternatives like satellite and mobile connectivity suffer from speed, reliability, and cost problems that make them unattractive to many potential e-learners. Impediments like these undoubtedly lead many of NSHE's distance

learners to prefer a local satellite campus, learning center, or community anchor institution (e.g., interactive video delivered to a local high school) over at-home online study.

Addressing these issues is especially challenging for Nevada due to the exceptionally low density of many rural areas, long distances, and overwhelming dominance of federal land ownership. Still, the progress made in the past few years shows that these problems can be overcome, and that broadband availability is spreading. Closer study of those NSHE students who hail from underserved counties and discussions with local school authorities about prospects and the role of networks in the college decision would go far in defining how this problem can be mitigated.

To clear the way for expansion of online programs that fulfill NSHE's historic distance and rural education mission, NSHE should ensure that the state is exploiting all available resources that expand broadband connectivity to the maximum possible extent. The Nevada broadband task force, appointed by Governor Sandoval in 2009 and including NSHE representation, provides a focal point where NSHE can articulate its e-learning access concerns. Proactive pursuit of federal funds to close the connectivity gap should be a major priority: Connect Nevada estimates that some 31,000 Nevada households lie in areas eligible for broadband deployment subsidies from the Obama administration's National Broadband Plan funds. We also believe that NSHE should press the state to develop a clear plan for broadband expansion and development, a clear input to economic development which Nevada currently lacks.

An additional concern for NSHE is the current vacuum of government and commercial leadership in the promotion of next-generation networks that operate well beyond today's speeds. NSHE should consider participation in Gig.U, a consortium of 37 research universities organized to extend very high speed Internet connectivity to universities and their communities. Of still more interest is the recently-formed Advanced Internet Regions (AIR.U) project, which will develop new "super wifi" technologies to improve broadband access around rural colleges and universities. These efforts, at a minimum should be tracked, if not influenced directly.

### **Affordability and Accessibility of Broadband Service**

The *availability* of broadband service (and of computers, software, and other digital tools) isn't the same thing as being able to take advantage of what's available. Despite something close to universal commercial availability in most communities, only about two-thirds of Nevada households have broadband connectivity. This leaves over 660,000 adults in the state unequipped with the basic resource enabling online study.

Reasons to be unconnected vary, but cost is a major factor. According to a 2012 survey by Connect Nevada, when asked for the main reason they don't subscribe to broadband, about one-third of unconnected Nevadans answer that monthly service, activation fees, or buying a computer in the first place cost too much. Only 6% say they can get broadband somewhere else. Barely half (53%) of low-income Nevada households with children have broadband access, and only 73% have a computer.

Some telecom carriers offer cheaper data plans to low-income households; for example, Comcast offers \$10/month broadband and a subsidized computer purchase to families with children who receive school lunch assistance. In addition, recent changes to federal subsidy mechanisms for low-income individuals and rural telecommunications carriers will allow subsidies, previously restricted only to voice telephony, to be used for data services as well.

A major challenge is that participation in universal service programs has historically been low. One study reports that only 29% of those eligible for low-income telephony assistance apply for it. The FCC has encouraged social service agencies rather than telcom companies to promote awareness of the revamped subsidy programs. NSHE's direct interest in widespread access to broadband suggests that its own community outreach and counseling programs, including its initiatives with K12 districts, should spread the message that assistance is available to reduce the cost of fast Internet access.

### **Access and Digital Divides**

When computing first became really personal in 1982, we wrote of "the digital divide." The divide was thought of monolithically and the world was divided into two camps: those who had access to computers and those who did not. As the internet revolution unfolded and as the world wide web became pervasive and computing became an essential tool of communication, our thinking about digital divides has progressed. Today, access to computers is not the primary issue. Well over 97 percent of all U.S. college and university students now own computers (ECAR, 2012) and have for years. Many students, in fact, arrive on campus with multiple computers, a router, a printer, an intelligent phone, and a game controller! Some research prematurely declared these students as NextGen wonder kids and "digital natives", declaring victory over the digital divide, except for that generational divide between tech savvy kids, and their older "digital immigrant" teachers and parents.

This view is limited and even wrongheaded in some important ways. Just as the possession of books did not make yesterday's incoming freshman either literate, book savvy, or research ready, the daily use of computers for email, videogaming, social networking, and other teen activities does not ensure digital literacy, or the capacity to easily adapt to the social and technical nuances of the e-learning environment. New divides have replaced old ones. Contemporary research suggests that today's collegiate population is in fact bimodally distributed where it comes to comfort with and self-confessed capabilities for putting computers, software, networks, and the like in the service of academic work. Even activities as mundane as "search" are generally carried out by many students in ways that stand in the way of their critical thinking development more than in support of it. (ECAR, 2012)

The lack of technical skills, research skills, or information literacy is another important barrier to broadband access. Fourteen percent of unconnected Nevadans say they don't have broadband because they don't know much about it, find it too complicated, or aren't comfortable using a computer. One also suspects that a large proportion of the 27% who say there is nothing they want to do that requires broadband are not fully aware of its affordances.

These challenges lie right in the midst of NSHE’s educational mission. We believe that digital literacy should be considered a college preparedness issue—a meta-skill that opens up educational possibilities almost as much as reading, writing, and arithmetic. We encourage NSHE to bolster digital literacy resources and initiatives, particularly through K12 outreach and dual enrollment programs, and to make the resources it develops to assess and improve online students’ study skills available to the widest possible audience. The NSHE system might consider partnering with a skills development provider like Lynda.com to broaden the range of available resources and pool demand in return for lower prices. The topic of student preparedness is also discussed in the Appendix *E-Learning and Student Success*.

There are issues besides preparedness that erode opportunity and access. They are difficult, complex, and out of scope for this study. It is worthwhile to note that it is well documented that socioeconomic status, family background, ethnicity and culture, gender, and other variables factor into student’s facility with, or even basic comfort with technology. Given Nevada’s challenging demographics, uneven distribution of technology and support in K-12 and other factors, we were somewhat surprised to not find any easy-to-find studies of student success, persistence, and so forth in e-learning as they are influenced by these segmentation variables. Developing a sharp understanding – through research and analytics – of which NSHE students participate or not in e-learning and which succeed or not in e-learning can point the way to mitigations and interventions that can enlarge participation. Such insights and actions could have a significant impact on rural access where “going [away from home] to college” may not be an option for many.

## **E-Learning and Student Centricity**

To bring e-learning forcefully to bear on its strategic goals, NSHE will have to do more to remove artificial barriers to trans-campus online study and help students take advantage of a thriving virtual educational marketplace. Much NSHE student behavior today—the voracious appetite for online courses even among campus-based learners, the non-traditional work/life profiles so many maintain, their “swirling” across outside institutions and transience within—reflect a larger desire, shaped by consumer expectations, for a more connected, real-time, convenient, and seamless college experience. We expect that NSHE learner transience will become still more pronounced in the future. NSHE should not allow its vital and legitimate concerns for academic quality to be conflated with self-serving interests, resulting in policies and practices designed to keep student revenues “on the home campus.” Institution-centered policies and practices that treat student shopping for courses as an exotic, slightly disreputable practice, or that subject students to policies that slow down or obstruct their educational progress are likely to erode the NSHE student experience and even to drive students longer term, out of NSHE’s arms.

Instead, NSHE needs to reform its processes and invest in e-learning capabilities that put the student rather than the institution at the center of the educational experience. Actions that NSHE could take to help bring this about include the following:

- **Help students explore and access NSHE courses** and services holistically through an NSHE online learning portal;
- **Eliminate administrative friction** that makes reaching beyond institutional boundaries (within or outside of NSHE) complex and frustrating;
- **Open alternative opportunities for earning credit** through prior learning assessment, challenge examination, or other means;
- **Improve technical and academic support services** for online students and make them available 24x7;
- **Improve systems integration** to provide students and faculty with common interfaces and single sign-on to the greatest extent feasible; and
- **Improve services integration** to provide students with common services delivered over the network or in easy-to-reach facilities.

We examine each of these options in detail in the remainder of this section.

### **Help Students Explore and Access NSHE Courses and Services**

Today it is just too difficult for students enrolled at one NSHE college or university even to find or enroll in courses at other NSHE institutions. Indeed, the system has lost ground in this area. Until recently, NSHE maintained a searchable online catalog of distance education courses at all institutions. This resource was discontinued and today NSHE students must forage across multiple campus catalogs and de-code a multiplicity of NSHE-wide and campus rules to enroll in course offered elsewhere within NSHE. The pool of transient students in this way becomes limited to the determined and the experienced.

Failing to make it really easy for students to discover and enroll in courses across NSHE's educational landscape is tragic on many levels. First, from a student experience perspective it confounds and defeats many students and flies in the face of the internet-based environment many already call home. Second, it defeats the investment that NSHE has already made in common course numbering, and in its policies on articulation and transfer of course work and credit. Third, it prevents some students from taking gateway courses that may have filled at his or her home campus. Failure to take gateway courses and the resulting bottlenecks are among the key reasons for attrition, failure to complete, and lengthening of the degree process. Making courses discoverable NSHE-wide makes it possible for NSHE to improve the availability both of high-demand courses that get oversubscribed and low-demand courses that under-fill at individual institutions. It should be a top e-learning priority for NSHE to make all distance and online courses easily discoverable to all students. Finally, financially challenged programs may find that aggregating demand and teaching resources actually improves their viability.

We do not suggest merely reviving the old distance education catalog, which had a bare-bones look and feel and limited search capability. Instead, we believe that NSHE should develop a new central resource that expresses NSHE's commitment to enlarging its educational footprint in

service to its students. To communicate that commitment successfully, an NSHE e-learning portal would ideally have most or all of the following characteristics:

- comprehensive coverage of all online, hybrid, and distance courses available at all NSHE institutions;
- the ability to include courses offered by external NSHE partners;
- flexible search on a wide variety of parameters;
- ability to compare selected courses side-by-side;
- attractive, high-quality design;
- resources that help students understand and explore the online learning environment, such as readiness self-assessments and links to further information;
- direct links to NSHE academic and administrative services, such as admissions and enrollment, financial aid information, library and e-tutoring; and
- the ability to deliver “one-stop” service to the greatest practical degree, referring students to institutional resources only as needed.

University systems like the University of California system are now committing to building such a portal and there is a growing number of state e-learning portals that NSHE could draw ideas from, including the Florida Virtual Campus, the Kentucky Virtual Campus, and the University System of Ohio’s OhioLearns.

While developing and deploying a “super course catalog” is essential, simply informing students that courses are available is not enough. The portal is likely the vehicle for instantiating NSHE wide norms, standards and practices regarding student readiness for e-learning. The portal can and should *enable* study, helping students to develop an informed understanding of what online education entails, compare alternate options, and actually take courses supported with appropriate services. This topic is treated in greater detail in the Appendix section *E-Learning and Student Success*.

### **Eliminate Administrative Friction**

Enabling online study across campus boundaries will also require simplifying and integrating administrative processes. Though the online environment invites students to consider a universe of possibilities (assuming they can find them!), as soon as they attempt to pluck this educational fruit they find themselves tangled up in complications. NSHE students taking a course outside their home institution must be separately admitted to the other institution, enroll separately, and pay separate fees—despite the fact that, among the colleges at least, admissions and registrations are conducted on shared systems. Faculty, distance education directors, and executives alike identified separate admission as a nuisance to students and an impediment to free access to online opportunity. We agree with the executive who told us that “a common admissions policy for the two-year colleges would be extraordinarily helpful.”

Just as students face up-front hurdles to gain access to courses, they confront uncertainty on the back end about whether the credits they earn will flow successfully elsewhere, especially

across the college-university divide. Though in principle common course numbering and 80 percent conformance to an agreed-on rubric guarantee transfer of general education credits, in actuality many of our interviewees acknowledged that the system was at best partially successful. Investigating the details of the breakdown is beyond the scope of this report, but we note that community college-to-university articulation does work smoothly in other states and that its failure has sometimes invited legislative action. We believe that NSHE must invest in sufficiently robust whole-system articulation to be able to assure students that course credit for satisfactory work will be accepted fully and seamlessly at the institutional and academic program levels. If inconsistent quality is a genuine concern, then that must be addressed through improved assessment and outcomes processes across the system, not left to impose a giant asterisk on every transfer student's transcript.

### **Open Alternative Opportunities for Earning Credit**

In addition to assuring students that the credits they earn at NSHE can be used productively throughout NSHE, the system also needs to offer more plentiful and transparent paths for recognizing learning obtained through work experience or other untraditional sources. Credit pathways like prior learning assessment or challenge examination are particularly relevant to the adult learners often found in online programs, and demand for such alternatives is likely to increase as the Internet offers more and more ways to learn through self-study or quasi-academic means like MOOCs.

While granting that accreditation requirements and other strictures limit what NSHE can do, initiatives by other institutions to open up the credit process—from participation in prior-learning programs such as those offered by the Council for Adult and Experiential Learning (CAEL) to recently-announced efforts by Georgia State and San Jose State to award credit for MOOCs—are flourishing, and provide opportunities for NSHE to join in or fashion innovations of its own. NSHE should also recognize the success, and possible attractiveness to Nevada's students, of reconceptualized degree programs like those offered by Western Governors University, or the planned University of Wisconsin Flexible Degree, which are based on competency assessments rather than seat time and traditional credit hours.

### **Improve Technical and Academic Support Services**

One of the most difficult aspects of a student-centric online learning operation to reconcile with traditional institutional practices is providing services outside campus confines and on learner schedules—which is to say, at all hours, every day. Making such services readily available is both a customer support issue and an academic one: high-quality, online-friendly services are one of the most important tools for closing the retention gap among online learners.

NSHE today is not well equipped to deliver this kind of support. Student technical support services, which as we noted in Chapter 4 have seen deep cuts and operate at minimal levels at some campuses, are nowhere offered with 24x7 availability. So have academic success centers, the front line of defense for many struggling students. The ability of NSHE's libraries to respond

to distance students with reference assistance, book delivery, article scanning, and other services varies widely, but no NSHE institution has something like Arizona State University Online's 24x7 "ask a librarian" chat service. Three NSHE institutions (CSN, TMCC, and NSC) offer the SmartThinking tutoring service to their students. Access to proctored testing centers is limited and we found little awareness about remote test proctoring options such as those offered by Respondus, Software Secure, and others. NSHE will need to consider adjustments as well to better offer financial aid, program advising, and career counseling services to online students.

We doubt that students particularly care where such services live, within NSHE or elsewhere, provided that they are responsive, competent, and sufficiently personalized to students' needs. NSHE should think boldly about how to provide the next generation of technical and academic services, considering options such as establishing central or consortial centers of excellence for online academic support services or outsourcing to the growing range of commercial academic and technical support providers for core or supplemental services. We also note that the investments in learner analytics we have mentioned elsewhere could go a long way in making these efforts more effective, targeted, and personalized. However implemented, the goal should be to give online students the same support through virtual means that they can get on campus, aligned with the calendars and study schedules that online students pursue.

### **Improve Systems Integration**

Information systems are the critical interface between students and online learning programs, and in their own way they go as far to define a student's experience as the physical campus does. Especially for students with limited previous exposure to technology, a systems environment filled with inconsistencies, disjointed sign-in procedures, and technical glitches can be a serious impediment to success.

Fortunately, NSHE has taken some good steps in its e-learning systems environment. The five colleges' decision to transition to the Instructure Canvas learning management system lays a solid foundation for a student-friendly e-learning environment and has the potential to rectify a longstanding shortage of good information about student learning behavior. We hope that NSHE will take aggressive advantage of the analytics capabilities that Canvas and other latest-generation learning management tools offer. Updating the university Blackboard LMSs, though it comes at the cost of a truly uniform LMS environment across NSHE, also gives UNR and UNLV modern platforms.

Still, rough spots and unfinished business remain which NSHE will have to confront if it is to offer students a seamless and easy-to-use technical environment. First, as a new product Canvas lacks native integration tools with PeopleSoft, and at least in the short term cross-system integration may be weaker than it previously was at some institutions. This could lead to some confusion as transactions completed in one system fail to trigger timely updates in others, and it could be an obstacle to creating cross-institutional services like common admissions and easy online course

registrations. Separate IDs and passwords for Canvas and PeopleSoft leave some online students confused and unable to log in. In another example, we are told that lack of integration following transition to the PeopleSoft SIS was a key reason why the NSHE distance education online catalog was abandoned. TMCC has taken the lead in providing Canvas-PeopleSoft integration to the other colleges and we hope this collaboration takes root and matures. Since NSHE online students will in some situations have to use two different LMSs, we also hope that Canvas and Blackboard Learn can be configured to be as similar in look and feel as possible, and made to operate within a common identity management environment.

The larger point we wish to emphasize is that NSHE's e-learning systems must not get in the way of learning. This will involve extending single sign-on as far as possible, pulling together data from different systems in ways transparent to users, and deploying well-designed, consistent user interfaces that express well-designed, consistent business processes. It will also be increasingly necessary to extend systems to the mobile environment and to integrate with a growing range of cloud-based services. The clear trend in consumer technology services from machine- or media-based products to individualized, cloud-based information services is coming to education as well. As a number of interviewees told us, NSHE's for-profit online competitors have high standards and ambitions in these areas, and NSHE must be able to meet them as well.

## E-Learning and Costs

Online learning is today poised to contain higher education costs without compromising quality, while promising new levels of opportunity, access, and success. Changes looming on e-learning's horizon promise to deliver very significant improvements in productivity both for students and for postsecondary institutions. Princeton University President Emeritus William Bowen, one of the pioneer researchers of "cost disease" in higher education and a former skeptic about technology's ability to turn it around, has recently pronounced himself a "convert," saying that online learning, though no panacea, can "in many of its manifestations [lead] to good learning outcomes at lower cost" (Bowen, 2012).

Achieving good learning outcomes at a lower cost is not strictly a technology challenge. Success will demand changes in the way education is offered, what Bowen calls a "system-wide perspective," and patience in looking for truly effective practices. Our capacity to contain costs through the application of learning technologies depends on productivity gains that have typically been realized only when technology is coupled with fundamental organizational changes that re-engineer business processes. Such changes are coming.

High-quality studies examining the impact of online learning on instructional costs are in short supply. As William Bowen recently stated "little attention has been paid to the costs [of e-learning]" and "this rapidly growing field has been built largely on the proverbial 'wing and a prayer'" (Bowen and Lack, 2012). No doubt this is partly because colleges and universities often develop online programs for reasons other than cost savings, such as reaching new student populations or improving learning outcomes. Many online programs aimed at working professionals are priced higher than comparable classroom programs. Given this context, it's not surprising that explosive growth in online enrolments over the last decade and a half has been

accompanied by rising rather than declining course costs. Importantly, the rapid uptake of such courses bears witness to the fact that while course costs may be higher in this mode of delivery, total education costs for the student may in fact be lower. This owes to the fact that total costs for a student include commuting time and expense and other costs not accounted for in the lion's share of economic analyses of online learning.

Colleges and universities rarely understand the full cost of a student's education and this makes them vulnerable. "Traditional companies and services get disrupted because they are inefficient and costly. The publishing industry has suffered in recent years, because reading on screens is more convenient. Why wait in line at a store when there's Amazon? Why pay for a travel agent when there's Expedia? The same argument can be applied to online education. An online syllabus could reach many more students, and reduce tuition charges and eliminate room and board. Students in an online university could take any course whenever they wanted, and wouldn't have to waste time bicycling to class." (Auletta, 2012)

While there is a lack of conclusive proof of institutional cost reduction, there are strong indications that institutions can contain or reduce their costs with e-learning by:

- Improving instructional efficiency;
- Diluting development and support costs through shared services;
- Exploiting new sources of educational content;
- Shifting and reducing space and infrastructure demands and costs; and
- Uncovering new revenue streams.

Some of these productivity and cost impacts are possible in today's environment, and others hold promise for the future.

### **Improving Learning Efficiency**

We are surrounded in everyday life by examples where technologies have reduced the need for person-to-person interactions. Most of these examples (though hardly all) are found in arenas far less complex than that of teacher-student interactions. Automatic Teller Machines (ATMs) for example have replaced how many of us conduct the routine transactions of banking. This has allowed banks to reduce some labor costs, to liberate human time for more complex and highly valued activities, and to make routine banking activity more widespread and convenient for customers. Routine banking now occurs in supermarkets and other public thoroughfares and is conducted on a 24-hour-a-day basis. In education, innovations such as Khan Academy, flipped lectures, adaptive learning, and others are increasing students' capacity to learn without traditional lectures, liberating their time and faculty time. As in the ATM example, institutions are making diverse choices about how to best harvest this liberated time. Institutions like Stanford University that are flipping lectures through their year 1 biology curriculum are using liberated time for review of problem topics, and to intensify and personalize classroom interactions. MOOCs instead focus to a great extent on peer learning and thus on reducing the unit costs of instruction. These tools and methods, therefore, are not monolithic and how they are applied increasingly reflects an institution's economic means, on one hand, and its attitudes about access, quality and student success on the other. This iron triangle tension has dogged higher education with every innovation from the introduction of lecture theaters, to textbooks,

to teaching assistants. As John Etchemendy, the Stanford provost, says, the “key question,” is: “How can we increase efficiency without decreasing quality?”

Through supplementary or substitutive use of electronic tools (sometimes backed by on-demand tutoring), 30 NCAT course redesigns conducted between 1999 and 2004 produced an average 37% reduction in per-student instructional costs compared to previous classroom-based methods. In all cases the redesigned courses delivered improved or equivalent learning outcomes (National Center for Academic Transformation 2005a, Twigg, 2003). Cost savings largely came from reduced demand for faculty time or substitution of less expensive instructional assistance, such as graduate assistants or peer tutors. A 2012 survey of 25 of the original institutions reported that at 22 of the 25, the redesigned courses were still being offered in substantially the same way (Rosenthal and Weitz, 2012), and none of the respondents said that staffing needs had increased since the redesign.

Since the NCAT work began, interactive learning tools have continued to evolve. One much-discussed project is the Online Learning Initiative at Carnegie Mellon University, a grant-funded project that is building a new generation of online courses employing technologies like intelligent tutoring systems, virtual laboratories, and embedded assessments. To date the OLI initiative has made 16 courses freely available to students and institutions, with more in development. Studies of OLI’s introductory statistics course report that students learn the material significantly faster than those in traditional courses, with equal or better outcomes. (Bowen et al. 2012). These results held up even among low-income and first-generation students, challenging the assumption that only the best-prepared students can benefit from interactive learning technologies. One study’s authors estimate that implementing similar interactive online tools in a hybrid setting could reduce instructor costs from 19% to 57%, depending on the teaching model used.

As with most technology-borne transformations, the situation is dynamic. Merely fifteen years ago, e-learning was rare, experimental and its outcomes were mistrusted. Today, it is rare to find a student in higher education who has not taken an online course and in 2010, the U.S. Department of Education meta-analysis concluded that “students in online conditions performed modestly better, on average, than those learning the same material through traditional face-to-face instruction” (Means et al., 2010). Today, while the MOOCs have taken on the issue of teaching at massive scale, its detractors rightly decry the very low rates of course completion. Yet next semester, Harvard University Law School will offer a course on copyright law to only 500 students and will support these students through 23 teaching fellows. This example suggests that in the longer term pedagogies will evolve, and that educational quality, economics, and outcomes will tilt in favor of technology mediation for certain learners and certain academic disciplines. And importantly, it is increasingly evident that low rates of course completion relate less to the mode of delivery, but are more pronounced among community college students, who tend to be disproportionately low-income and academically underprepared. (Jaggers, 2011)

Elements of this dynamic environment are already in sharp focus.

Emerging pedagogies are simultaneously lowering the costs of instructional delivery and challenging the long-held and documented fact of e-learning’s completion challenge. The University System of Georgia’s eCore program is already leveraging a standard course delivery

approach, standardized and highly tuned instructional design support, a trained and equipped teaching faculty, and a set of shared student academic services to lower student general education costs while boosting completion rates. MOOC ongoing experiments such as the Harvard Law example, or Udacity's partnership with San Jose State (SJSU) to teach introductory mathematics may illuminate other paths to effective cost reductions. SJSU hopes to lower student costs to \$150 from the \$300-\$750 fees they would usually pay. (CHE, 2012)

Emerging technologies with high potential to lower learning costs for both students and for NSHE institutions are also in focus and include:

- E-textbooks that can “do things” (perform simulations, integrate audio and video, etc.) while lowering a student's total textbook costs;
- new learning management systems and content platforms that track students' learning behaviors in detail, permitting better real-time analysis of learning;
- adaptive learning and artificial intelligence systems that can score student assignments, shape lessons to address students' learning needs, and help instructors identify interventions; and
- learning analytics – particularly predictive analytics to identify risks, alerts, and a variety of counseling and other interventions that can reduce attrition, time to degree, and other waste.

## **Sharing Services**

### **Sharing Instruction**

No serious effort to contain instructional costs can ignore the fact that the redundant creation of courses and delivery infrastructure on separate campuses is inefficient. While intellectual diversity and freedom of faculty choice are highly valued, the economic realities that have forced NSHE campuses to consolidate academic and other programs confirm that the days are passing when trying to make every campus academically self-sufficient makes economic sense. Compounding this, digital technologies enable cheap communications, easy reproduction and distribution of content, and the ability to assemble expertise and audiences virtually. It's time for NSHE to take advantage of these attributes. E-learning provides the means for NSHE institutions to retain vigorous and deep curricula without having to maintain the expensive luxury of a comprehensive professoriate that covers all academic waterfronts. No longer does a research university have to maintain a scarce Russian medievalist to teach Old Church Slavonic - it can instead offer such courses that may be hosted elsewhere. In this way, even if the cost of the e-learning course is higher than the equivalent face-to-face offering, the “receiving” institution no longer needs a full time instructor in medieval Russia, and institutional costs overall are much better. In this way, the core academic enterprise can begin to re-fashion itself as libraries have done. Academic libraries have concluded that not everyone needs to collect everything, but instead focused on coordinated specialization, deep collaboration, and a small number of collection-of-record libraries. These strategies combine to ensure continued access to library materials at a vastly reduced cost to participating institutions, to government, and to society.

The combination of sharable master courses, policy provisions for flexibility within an agreed-on NSHE course rubric, and a redoubled quality assurance of training for adjunct teachers could be

a game changer: enhanced learning experiences, improved student success, increased affordability, and reduced institutional costs. This strategy assumes that such courses are easy to discover, enroll in, and receive credit for, and that the economic returns for instructional effort and resources flow in proportion to the effort expended, and that financial aid flows seamlessly independent of a course's point of origination. The logic of master course programming and course sharing of course set the stage in turn for future enlargements of the NSHE course catalog through WICHE arrangements, contracts with MOOCs, or others. This strategy can change costs profoundly while honoring NSHE faculty leadership roles in curriculum design, program planning, and academic quality assurance.

### **Sharing Technology Infrastructure**

Sharing instructional services, of course, is only one means of lowering the institution's costs and making an NSHE education more affordable. Today, colleges and universities – like their business counterparts – are moving from local provision of IT services to new hosted or cloud-based services that offer the capacity to spread costs over more participants. Increasingly, student academic services such as counseling, tutoring, testing, help desk and others – and the infrastructures they depend on – will be shared among NSHE providers with common student support needs. Many such services are becoming available in the broader marketplace, making it possible for NSHE to evaluate the service quality and costs in a competitive market context. For example: UNR could begin – as UT Austin does for the UT system – to negotiate NSHE-wide licenses for digital library materials. Or NSHE could mobilize WICHE or other consortia for similar services. One U.S. distance learning consortium estimates that its LMS hosting service can save a member institution over \$300,000 annually, mainly by reducing IT staffing needs (Corcoran, 2009). Such organizations in the U.S. operate in states including New York, Connecticut, Florida, Ohio, Utah, and California. Long term, the capacity to operate effectively within consortia will be critical. Today, Open Universities Australia unifies distance education offerings from seven universities and fourteen polytechnics, while ChinaEdu offers e-learning services for 26 public universities. 2U and others are providing consortial services in the US today.

### **Sharing Course Development, Library, and Student Support Services**

Consortium and system wide sharing is moving on to other academic services, including instructional design, faculty professional development, quality assessment, library services, and assorted student services, including tutoring. Some examples include shared:

- online services that help students apply to and transfer between campuses more easily (University of California campuses)
- operation of an open educational resources repository (Hathi Trust)
- online writing assistance, plagiarism detection services, and others
- student call centers (Arizona State Online, Cal State Online)
- online library reference services (BC Campus)
- Instructional design and faculty development (University System of Georgia, Open Universities Australia)

BC campus' shared services save its members \$3 million annually (BC Campus, 2012). Open Universities Australia's Center for Online Learning Excellence has won awards for its shared learning design and instructor training programs. (Open Universities Australia, 2011)

The University System of Georgia (USG) now plans to create a suite of online bachelors' degrees by adding to its eCore, an online core curriculum guaranteed for transfer to USG four-year institutions. The financially self-sustaining eCore organization provides LMS hosting, course design consultation, testing, and other shared services, while master courses are developed and taught by USG faculty at nine campuses. Revenues are split between eCore and the campuses. In the new program, instructional costs will be held down by making extensive use of self-paced, outcomes-based courses alongside synchronous instructor-guided courses. USG estimates that in five years, the new program can achieve a per-student instructional cost of \$5,000, a little over half the current \$9,700 average at USG campuses. Correspondingly, student fees will be about 25% lower. (Board of Regents of the University System of Georgia, 2012)

### **Sharing Open and Commercial Digital Educational Resources**

Another aspect of sharing promoted in recent years is the creation of educational resources under Creative Commons licenses permitting "open" use and adaptation, without royalties or fees. Motivated in part by the high cost of commercially-produced resources, the open educational resources (OER) movement looks to foundation grants and government support, as well as altruistic contributions, to produce high-quality academic content that can be distributed free or at very low cost. OERs now feature in every discussion about educational access and cost, fortified by a United Nations declaration in their favor and by a string of interesting demonstration projects (Atkins, Brown, and Hammond, 2007). The Washington state community and technical colleges estimate that just one year after creating an Open Course Library built around OERs, students in the system had already saved its students over \$1 million in textbook costs. The colleges anticipate that using OERs in a single high-enrollment English course will save \$4.7 million per year. (Washington State Board for Community and Technical Colleges, 2011) Projected savings in the University System of Georgia's low-cost online BA initiative stem in part from use of OERs.

Even where digital library content is proprietary, cost-savings opportunities are also flourishing. The University of Texas at Austin's licenses with commercial publishers provide for access by students, faculty and staff at other UT systems. Such licensing lowers the per student cost of access for those at smaller UT campuses, or simply makes essential academic material available that would otherwise be unavailable. These sharing and licensing benefits are spreading beyond simple digital texts as learning resources become more complex and "smarter." Indeed, the cost reductions in many NCAT course redesigns, for example, depend on the use of commercial online self-study tools. Publishers like Pearson, Cengage, McGraw-Hill and others are investing heavily in a new generation of such tools.

### **Reducing Space and Infrastructure Costs**

While students in all forms of online learning take courses, use library resources, participate in discussion and consume student services, in most cases, many do so without consuming scarce and expensive campus "places." Online and hybrid classes relieve pressure for classroom space, parking, and a host of other drivers of cost. They also reduce pressures on campus utility systems, another major driver of post-secondary education costs. One study at the University of British Columbia estimated that converting four large lecture-style courses to online delivery would reduce the number of classrooms occupied at peak hours by 15%. (Bourlova and Bullen, 2005) After redesigning several popular courses from classroom-only to hybrid delivery, the

University of Central Florida was able to cut the number of course sections housed in rented space annually from 65-70 to 33 (NCAT, 2005b). The University of Minnesota – Twin Cities, University of Melbourne and others have reduced the construction of new lecture halls in light of emerging new technology-mediated pedagogies such as flipped lectures.

### **Uncovering New Revenue Streams**

Aside from cost reductions as outlined above, e-learning can help improve an institution's financial condition by attracting new students and new revenues. E-learning has become a very big business. Examples abound of institutions that are riding e-learning's wave to financial success. The University of Phoenix Online probably derived at least half of its \$3.88 billion revenues in 2011-2012 from online modalities (Apollo Group, 2012). Colorado State's CSU World Campus, University of Maryland University College, the Colorado Community College Online, Penn State World Campus, and many others are growing enrollments and generating new net revenues through collective action in the e-learning arena. In many cases these operations contribute handsomely to overall institutional finances. At Hawaii's Chaminade University, e-learning program revenues now outstrip those from the institution's campus programs and net e-learning revenues have made it possible for the institution to complete all deferred maintenance on the campus. At UT-Arlington, online delivery has grown RN to BSN enrollments from 100 to 5,000 students in less than 5 years.

In Nevada, e-learning also represents an opportunity to enlarge its appeal and access to out-of-state students and – under the evolving new state funding formula – to retain out-of-state tuition at the originating campus. Investments in e-learning can help NSHE colleges and universities smooth funding troughs in years of low in-state student enrollments by exporting e-learning enrollments in areas of reputational strengths to states like California where important capacity constraints are reducing opportunities for academically able and financially capable prospects. Such moves are neither predatory, nor do they subtract from the educational opportunities for Nevadans. Indeed they bring much needed revenue to the NSHE colleges and universities and have the potential to create durable linkages to a future on-ground student body, or Nevada workforce.

### **Cost, Access, Quality: Rethinking the Interactions**

E-learning won its battle to demonstrate that it meets the educational quality standards of classroom instruction. Thanks to the spreading (though still not universal) availability of broadband networks e-learning has also made real gains in extending access to populations who have no other opportunity for post-secondary study. The key work that remains is acting on what we have learned in nearly two decades of research and practical experience to use online learning to drive down the cost of instruction. This means rethinking what has been described as postsecondary education's "iron triangle" – the assumption that in the triad of cost, access, and quality, improving any two means degrading the third. This means rethinking the idea that the best educational quality can only be achieved in selective residential institutions, where limited access and personalized interactions and assessments preclude economies of scale. As students make use of increasingly effective large-scale online tools, and have access to large-scale, high-quality assessment and credentialing mechanisms, it will be possible for colleges and universities to break out of the iron triangle. Most higher education leaders, policy makers, corporate leaders, philanthropists, and others now believe the question is now when, not whether this will happen. The revolutionary aspects of the new emerging pedagogies and

delivery systems – their real-time interactivity, low-cost reproducibility, and capacity for assembling social networks—provide a promising basis for reforming the costs of instruction. At the same time, to realize these advantages, our colleges and universities will need to experiment and have to be willing to incorporate new tools into the curriculum, share costs at the maximum possible scale, and make cost containment at least an equal priority to expanded access.

### Conditions for Success

Healthy skepticism, shared governance, vested interests, and deeply-cherished traditions will certainly continue to dot the pathway to a re-shaped e-learning program for NSHE (as it will for all incumbents). Notwithstanding these, there is cause for optimism, due to successes already attained and the growing recognized need for new solutions. Realizing the possibilities will require:

- **Making cost containment a priority.** Notwithstanding very real innovation in online delivery, little attention has been paid to changing the cost basis of instruction—a different project than the budget-cutting that is familiar to many institutions. Our leaders, venture philanthropists, and increasingly the public at large recognize that affordability is the ultimate guarantor of access. College and university administrators and faculty now must add their weight to the movement for real cost reform. Alternatively, reform will be imposed from without.
- **Redesigning academic and business processes for the online environment.** The habit of institutional self-sufficiency made sense when information resources needed to be concentrated in a physical place. But the free information flows and virtual communities of the internet era call for more open approaches. From course development to infrastructure and academic support, institutions must work together to share costs. By the same token, NSHE – over time – should explore sharing even larger sharable infrastructures, in the so-called cloud, or those hosted by consortia like WICHE. To allow students to take best advantage of e-learning opportunities and avoid wasteful course repetitions, NSHE colleges and universities must develop smoother, more predictable credit articulation, and move to recognize non-traditional sources of prior learning.
- **Preparing students.** The evidence is clear that socio-economics and preparedness are statistically correlated to each other and to poor course completion – particularly in e-learning. Higher education’s poorest students’ 6-year graduation rates decline 3 percent for each \$1,000 rise in net education costs. NSHE must find ways to mitigate the worst effects of recent fee increases for its poorest students and to focus serious attention on practices that prepare students for the added challenges of e-learning. Many such practices are already in use at NSHE.
- **Preparing the faculty.** Teaching online requires different and more explicit pedagogical strategies than the familiar techniques of the classroom. While the spread of online learning is constantly enlarging the pipeline of instructors who have themselves gained their education through it, online remains an unfamiliar environment for many. Institutions need to train instructors in theories and techniques, and incorporate tools that have been shown to result in better, more cost-effective learning outcomes.

- **Expanding the range of educational partners.** Online learning consortia, OER collaboratives, informal Internet-based learning opportunities, social networks, MOOCs—these and other educational options are expanding the range of learning providers far beyond the confines of the PSE sector. In the meantime, some of PSE’s traditional partners, including academic publishers, are themselves undergoing transformation and financial stress. Changing the cost dynamics of instruction through online learning will mean learning to draw educational content from a far more diverse variety of sources, as well as looking to partners and possibilities beyond the post-secondary sector.
- **More and better research.** While it is a cliché to conclude by saying that “more research is needed,” the U.S. Department of Education meta-analysis that provides evidence of equal or superior learning outcomes in e-learning found that only 46 of the 1132 studies examined met its high quality standards (Means, 2010). And we know that e-learning is not yet delivering completion rates on a par with face-to-face instruction. More research and experimentation are needed to guide the investments and interventions that will be needed to close that gap.

## E-Learning within NSHE

We triangulated the data from: (1) our review of NSHE reports and web site; (2) our interviews with the e-learning advisory committee and more than 400 NSHE students, faculty, staff, and leaders, and (3) our scan of current higher education trends to evaluate NSHE's capabilities in e-learning and to set the stage for our recommendations. For each of these capabilities, we identify strengths, challenges, opportunities, and threats. In each case, we follow our summary of strengths, challenges, opportunities, and threats with a summary of key findings.

We evaluated the following key characteristics of the NSHE e-learning environment:

- Strategy and planning;
- Online program and course creation;
- Policies and incentives;
- Marketing;
- Delivery systems; and
- Academic and administrative support.

Note, this was not an assessment of campus e-learning programs, but a review of capabilities from the standpoint of NSHE as a whole, understanding that the observations made and conclusions drawn do not carry from one institution to another. References to particular institutions are illustrative only and should not be regarded as institutional assessments or findings.

### Strategy and Planning

This critical capability consists of defining a coherent e-learning strategy that advances the NSHE mission and in particular the Board priorities of student success, opportunity and access, student centeredness, and educational affordability. It also encompasses NSHE's capacity to define a future vision for e-learning, to articulate a path toward achieving the vision, and the means to assemble the necessary resources.

#### Strengths

- NSHE e-learning programs provide and extend educational opportunities to all of Nevada. Even more, the broad NSHE community is passionate about making an NSHE education economically and physically accessible to all Nevadans.
- Nevada's accent on developing a diverse and knowledge-driven economy places a positive accent on NSHE's role and importance.
- Nevada state leadership and the Board of Regents endorse a project of economic diversification and development which relies on substantially enhancing educational access and attainment in the state.

- NSHE institutions have been able to satisfy the extraordinary growth in demand for e-learning. Key indicators of e-learning program effectiveness such as participation in e-learning, rates of course completion, e-learning class/section size, and so forth indicate that NSHE e-learning programs are performing well. This is particularly true in light of data that suggest that newly matriculated Nevada high school graduates often arrive unprepared for the rigors of an NSHE education.
- The NSHE Regents' policy framework of educational accessibility and opportunity for all and of a "student-centered" system is clear and actionable.
- NSHE's institutions have well-elaborated goals that include: advancing knowledge through research; providing a classic residential education rooted in liberal arts values; offering educational opportunity at low cost; developing Nevada's workforce; serving adult learners with convenient study options; and serving rural and distance populations.
- NSHE's institutions have close ties to local communities and institutions which provide recruiting and economic development opportunities.
- E-learning has special relevance in Nevada, which has high proportions of non-residential, working, and job skills-oriented students, and large low-density districts where distance education provides the only practical access to higher education.
- Five NSHE campuses are actively and voluntarily collaborating to explore common solutions.

### **Challenges**

- Nearly one-third of all NSHE enrollments are now e-learning enrollments, yet NSHE as a system and its institutions lack clear strategic visions for e-learning. Within a decade, e-learning will comprise the dominant mode of instruction at half or more of NSHE colleges and universities.
- Excellence and austerity only arise in the context of profound reprioritization and redesign. While much has been done in this regard in the past four years, much remains to be done. Otherwise, a vision and goals that appear unreachable may attract only cynicism.
- NSHE as a whole has not wrestled collectively with the Board's master planning goals of: (1) "a student-focused system", and (2) "opportunity and accessible education for all."
- The resources may not exist to fully realize these policy goals and both resource scarcity and competition steer leadership attention elsewhere.
- NSHE leaders have had full plates addressing significant funding cuts in the past four years.
- NSHE funding challenges of the past four years have transferred considerable cost of higher education from the state to NSHE students. There is compelling evidence that for the poorest students, increases in net education costs are tied closely to reduced graduation rates.

- Rural Nevadans may not have adequate access to affordable broadband internet and there does not appear to be an analysis of where in the state high demand for NSHE education and low internet connectivity collide.
- E-learning completion rates nationally, and within NSHE, are lower than their face-to-face counterparts by about 10 percent. Developing sound strategy for e-learning amidst new funding incentives that focus on successful course completion is a complex challenge.
- While the NSHE Distance Education Reports are a clear strength and make clear the goals and accomplishments of NSHE campus distance education programs, these reports are published only every other year.
- Similarly, it is very hard to find documentation of effective practices in use at NSHE campus e-learning programs.
- There are few incentives to act holistically and many (appropriate) incentives to optimize campus enrollments or to minimize 'trans-campus' flows of students. Full realization of a student-centered vision will demand policies that recognize and resource the providers of e-learning courses [balance of trade].
- NSHE as a system and its campuses' efforts in learning analytics appear to be incipient, fragmented, and lacking in serious priority. This will become particularly challenging as funding incentives shift from enrollments to completion and other outcomes.
- Opinions vary within key NSHE stakeholders on the value of online versus classroom/residential degree programs – especially at the universities and particularly around courses with laboratory requirements.
  - Differences between NSHE's research universities and others reflect genuine, complex, and legitimate differences in mission and outlook, and
  - Differences produce unspoken or unresolved conflicts about articulation, academic standards, faculty workload, cross-listing, etc. which frustrate a system-wide perspective on e-learning.
- E-learning is itself in transition and there is genuine puzzlement about how to exploit or respond to the volatile, experimental developments now taking place.

### **Opportunities**

- A strategic e-learning vision could provide a compelling rationale for systemwide collaboration eliminating barriers to articulation, cross-institutional study, outcomes assessment, and other long- unresolved issues.
- The emergence of new large scale e-learning pedagogies, the entry of new providers, and the entry of the top tier schools to the e-learning market have elevated the importance of e-learning to the board level and beyond. State systems and others are mobilizing at speeds seldom seen in higher education.
- The absence of an entrenched systemwide e-learning strategy makes it easier to introduce new mechanisms and initiatives.

- NSHE's history of working within large partnership frameworks such as WICHE is an important competitive strength in the emerging higher education competitive climate.
- Philanthropists with goals that are in harmony with those of NSHE's board and leadership create funding opportunities for bold actions that demonstrate emerging capabilities.

### **Threats**

- NSHE's credibility with legislators, regents, and the public will be at risk if the system is perceived as being either unable or unwilling to participate in the bold educational experiments now attracting so much attention.
- Competitively, NSHE colleges and universities amidst higher education's changing conditions occupy a very challenging niche, with a much-challenged student pipeline, considerable funding uncertainties, and a state looking to them for leadership. Without strategic change, these factors could combine to form a perfect storm.
- In the absence of strategic vision, NSHE will be unable to make a convincing case for the investments needed to produce a more robust and innovative system-wide e-learning capability.
- In the absence of conscious strategy and plans, NSHE will be acted upon by others, including those internally with well-meaning but short-sighted agendas. More agile competitors offering a revamped "e-learning 2.0" are likely to attract increasing numbers of current and potential NSHE students.

### **Analysis**

Since the purpose of our project is to help NSHE develop an e-learning strategy, it should not come as a surprise that our first finding is that NSHE lacks such a strategy. Still, it is important to understand why that is so, and what the implications are. With a history of 'loose coupling' (despite some important centralized functions) and with a collection of dissimilar institutional missions, e-learning has grown dramatically because of its presidents' ability to read the market and to deploy resources as needed to meet the growing demand. Most of the benefits of that approach have been realized. In this decentralized fashion NSHE as a whole has gone farther to incorporate e-learning into curricula and study profiles than most other state systems, and often on the proverbial shoestring.

This approach –while highly effective in yesterday's competitive climate and funding climate carries real risks today. Today private equity firms and venture capitalists are financing new collaboratives and arming them with very crisp vision statements and performance goals. With few collective resources to fall back on, and no strategic vision to lend coherence to painful prioritization decisions, institutions like NSHE may be on the wrong side of history.

Students today are transient and proud to be so. They – like us – flit from web site to web site searching for the best product or service at the best price. For them higher education is another consumer experience or service and increasingly, they are preferring those institutions that

empower them to span boundaries. For some, today's MOOC course at Harvard is like yesterday's study abroad program. In the context of these changes, some of NSHE's most promising options—its ability to share resources and offer rich cross-institutional programs to students—are stymied by unresolved differences or dependent on slow bilateral negotiations. Meanwhile, a juggernaut of educational innovation is massing outside NSHE's boundaries and is bringing ever closer the day when market forces could reshape the system's options without regard to institutional interests or academic tradition. How NSHE will respond to that pressure is perhaps the most important issue it faces, and it is a strategic, not a tactical quandary.

We conclude that NSHE must define a strategic vision for e-learning that better exploits the system's size and diversity as a whole, and that eliminates artificial barriers that keep students from taking advantage of all the system's resources. This is not a coded plea for centralization. Developing a strategic planning capability for e-learning is all about finding a broader range of choices than "owned by the institution" and "owned by the system office." The goal should be an e-learning strategy in which institutions help each other realize both common and individual goals, through a full spectrum of collaboration and resource sharing.

**Finding 1:** *NSHE lacks focused and sustained leadership attention to e-learning at the strategic and system level. NSHE and its institutions lack clear strategic visions for e-learning.*

**Finding 2:** *Funding cuts and rising competition from external e-learning providers make it increasingly difficult for NSHE to continue with an unguided, distributed approach to e-learning.*

**Finding 3:** *Conditions suggest that NSHE needs to leverage resources, and open opportunities across the system.*

**Finding 4:** *Failure to formulate a strategic response that takes into account radical emerging innovations in higher education e-learning will risk NSHE's success and credibility among students.*

## E-learning Program and Course Creation

This addresses NSHE's capability to create high-quality online programs and courses. It includes faculty training and professional development, the availability of technical and pedagogical assistance in course design, quality assurance, and access to traditional and emerging learning content and technologies.

### Strengths

- NSHE has produced an enormous variety of e-learning courses and programs to meet rapidly growing demand; interviewees agree that "online sections always fill first."
- Though it is in early stages, there has been statewide adoption of the Quality Matters rubric, which formalizes online course development and review.

- NSHE faculty workload policy recognizes the principle of adjusting workloads to reflect the differences in different kinds of instruction, specifically including distance education and “Internet instruction;” application is left to the institutions.
- Some NSHE institutions have encouraged collaborative creation of online standardized courses to improve quality and lower costs (examples include UNR’s humanities core and NSC’s “supercourses”).
- Some NSHE institutions, notably GBC and UNLV, have well-developed faculty training programs which certify instructors for online teaching.
- Distance education coordinators at the colleges report a strong informal network of mutual communication, which has been enhanced by five-way implementation of the Canvas LMS.
- There is considerable creative, collaborative, and innovative talent among the faculty and the e-learning leadership. Examples of innovative actions include the development of a digital library of learning objects and the development (joint staff and faculty) of an adaptive learning e-textbook.

### **Challenges**

- The lack of a coherent strategic view of e-learning cascades to a lack of coherence to guide e-learning program development. Each NSHE institution has a different distance education fee, a different staff complement, a different philosophy about preferred e-learning modes of instruction, and differing levels of commitment or ambivalence to the existing NSHE policies that promote cross campus e-learning enrollments.
- There are no consistent, shared, and well-understood models that describe the cost implications of different e-learning design and deployment approaches. Full-time faculty and deans consistently report that the extra burdens of developing online courses are not adequately recognized or compensated, though policies vary among institutions.
- While many NSHE campuses have a “way” of developing e-learning courses, that way differs from campus to campus and is typically voluntary within the campus.
- The funding premium that has historically accrued to e-learning courses under NSHE’s current funding formula with the state is likely to be eliminated.
- Lack of meaningful or predictable compensation for course development makes part-time instruction online particularly unattractive and has contributed to reported quality problems in e-learning courses taught by part time instructors.
- Some faculty are believed to be resistant to formalized quality processes.
- Adoption of Quality Matters or other rubrics is recent at NSHE institutions and is not mature; rubric requirements such as peer review and departmental or deaconal approval place new demands on already thin resources.
- Availability of instructional design assistance for faculty varies widely. In some locations it is weak and overstretched. In one case, an NSHE campus depends on one person to support every aspect of its distance education program.

- Distance education fees remain too low at most institutions to support adequate instructional design resources.

### **Opportunities**

- The “unbundling” of higher education is catalyzing the emergence of a rich “ecosystem” of “open” and commercially available methods, platforms, standards, services, tools, and content. Creating a state-of-the-art e-learning course delivery framework, along with shareable tutoring, exam proctoring, e-textbook, and other academic services is not that complex or expensive. And the second lap of e-learning’s competitive race is just beginning.
- The ability for each NSHE institution to retain out-of-state revenues anticipated in Nevada’s new higher education funding model improves incentives for identifying or developing programs that can be marketed regionally, nationally or globally.
- Good practices across the spectrum of e-learning course and program development exist within NSHE and can be leveraged more effectively.
- Local pockets of well-developed faculty training and course development expertise (as at TMCC, UNLV, and GBC) could be leveraged throughout the system if scaled up and, potentially, reorganized.

### **Threats**

- Disinvestment over the past few years in the resources needed to develop high quality e-learning courses and programs has limited NSHE’s ability to innovate or even to adequately address known problems; this is a mismatch with expectations that e-learning can help the state achieve its goals of a better-educated and more diversified workforce. It also results in higher levels of attrition, and lower graduation rates.
- NSHE institutions are virtually all locked into a high-cost, customized, instructor-owned model of online course development, for which resources are notably inadequate. There is no focused institutional engagement with the possibility that MOOCs or other interlopers might introduce radically revamped course economics, and no plan for either exploiting or competing with these models. Actions ranging from hand-wringing to very small-scale, campus-based experiments characterize the as-is environment at NSHE today.

### **Analysis**

Contrasts in NSHE’s e-learning capabilities are nowhere more evident than in the resources dedicated to online learning design and creation. The scale and scope of NSHE’s operations speak for themselves, with online enrollments exceeding 30 percent across NSHE and 50 percent at several institutions. Moreover, e-learning is clearly an essential means for making gateway courses available and for keeping students on a degree track—characteristics that are of undeniable strategic significance. In too many cases, NSHE institutions have been “muddling through,” producing courses with miniscule and diminishing instructional design resources and in the absence of sufficient resources and a settled shared e-learning course or program

development strategy and approach. And not surprisingly, results – in terms of completion rates, retention, graduation rates – vary widely. E-learning program costs also vary widely, with average e-learning class sizes ranging from 10 students on average at one NSHE college, to nearly 30 at another. (NSHE Distance Education Report, 2010) One NSHE campus reports that the technical support for its entire distance education program rests on the shoulders of one dedicated, but overwhelmed and overworked professional. More than 25 percent of the students at that campus take at least one e-learning course!

The situation described is – as mentioned – a natural and unsurprising artifact of a governance and organizational structure that vested fullest authority and autonomy in NSHE campuses. Our premise is simple: while this model works in a bubble (think real estate), e-learning enrollments nationally and in Nevada have begun to flatten out from their ‘super-normal’ growth rates. This combined with the emergence of new competitors armed with new technology, big brands, and small price tags convinces us that NSHE must begin to exploit the leverage it has ... as a system. The high concentration of NSHE students and faculty in two urban areas suggests that regional centers of excellence in instructional design could serve multiple institutions more effectively than the current—and in some cases painfully under resourced—practice of institutions going it alone. Likewise tentative efforts to create re-usable general education courses could be expanded and promoted across institutional boundaries.

Moreover, NSHE will have to come to grips with the emerging e-learning environment even as it struggles to support the current one. MOOCs, commercial providers, and consortial collaborations like recent announcements by the Semester Online program, by 2U, by Arizona State, by Pearson, and others are proliferating. NSHE needs to incorporate this trend into its planning for e-learning programs and courses, identifying alternative ways to source courses that operate alongside NSHE development efforts.

**Finding 1:** *Despite some local excellence and a system-wide tradition of “doing more with less,” program and course creation capabilities have suffered through the period of budget austerity and are not positioned well for expansion or innovation.*

**Finding 2:** *NSHE online program creation is not guided in most cases by a clear strategic vision for e-learning.*

**Finding 3:** *Faculty in general believe that the extra work of developing and maintaining online courses is not adequately compensated (through financial incentives and/or workload relief), though practices vary widely by institution.*

**Finding 4:** *The spreading adoption of formal quality rubrics like Quality Matters is a positive sign and should be pursued to a higher level of adoption and maturity. Funding for such adoption is insufficient and varies widely between institutions.*

**Finding 5:** *Local pockets of excellence in faculty development and instructional design and development could be leveraged more effectively across the NSHE system.*

**Finding 6:** *NSHE is not currently exploiting MOOCs, commercial courseware, or other alternative course sourcing methods, but it will have to develop a coherent response to these developments in the near future or risk being overtaken by events.*

## Policies and Incentives

This encompasses policies at the system and institutional levels that define e-learning practices and standards, and the incentives offered to faculty, schools/colleges, or departments to develop and offer e-learning courses and for NSHE institutions to make courses easily available to students at other NSHE institutions. Policies and incentives facilitate the flow of academic commerce between and among NSHE campuses, the sharing of academic resources, and the meaningful interchange of course credits where specified under NSHE policy.

### Strengths

- The NSHE system distance education policy provides a firm foundation for well-designed and well-managed online learning programs, including a principle of equal quality between distance and on-campus modes and provisions for faculty incentives, appropriate instructional support, distance learning fees, mode-specific pedagogy, and institutional oversight of course and program approval.
- Regents' policy opens the door to collaborative action through revenue sharing, shared services, and partnerships with out-of-state institutions.
- Several NSHE institutions, notably TMCC, CSN, and UNLV, have developed relatively mature e-learning policy and planning environments that can be a resource for other institutions.
- Learning assessment is spreading through NSHE institutions.
- The common course numbering policy for general education courses creates a foundation for widespread collaboration and responsiveness to students' growing desires for educational options.

### Challenges

- Policies at the college and university level vary widely and appear to have not become deeply imbedded in institutional culture. There is some faculty perception that formal rubrics for online course quality simply duplicate existing course approval policies.
- Learning assessment remains largely voluntary and department-based and it is hard to formulate an institutional or system-wide view of learning outcomes.
- NSHE lacks a systemwide policy for distance education fees, which partially accounts for uneven e-learning resources and maturity.
- Incentives encouraging faculty to develop online courses and improve professional skills relating to e-learning vary greatly among institutions but are often weak, especially at the colleges. At some institutions, lack of interested instructors is a key constraint to offering online courses that are in demand.
- Based on interviews, there is strong subjective evidence that transfer of credit under NSHE's common course numbering and credit transfer policy is not seamless, may break down in the academic program office, and is viewed by many as problematic.

## Opportunities

- A consistent and comprehensible internal trade policy that fosters student mobility without unintentionally harming the budgets of home institutions would lower some important barriers to free student movement across NSHE locations. Cross campus course sharing can ease course bottlenecks in gateway courses, improving both student success and home institution economics as retention and graduation rates rise.
- E-learning enrollment patterns can be examined holistically. Currently there appears to be little or no incentive for institutions to cancel courses or sections that are under subscribed. Enrollments averaging 10 students per class or section are economically unsustainable and significant costs might be avoided through enhanced cross institutional enrollments.
- The new funding formula presents an opportunity to explore how faculty, departmental, and institutional incentives can be re-crafted to focus on students' successful completion of courses as well as on traditional rewards from enrollment in courses.
- Improved incentives for faculty to develop e-learning courses could lead to better course quality and greater course availability for students.

## Threats

- The lack of resources, incentives, NSHE's demonstrable past e-learning successes, and/or the lack of awareness of a burning platform for change can foster complacency. The case for change and a compelling new vision are themselves critical incentives for behavior change and alignment across disparate NSHE units and locations.

## Analysis

NSHE's policy environment for e-learning has struggled to keep up with both the scale of the system's online learning operations and its rising strategic significance. On the positive side, most of NSHE's institutions now have the formal distance or online learning policies envisioned in the system distance education policy, and a consensus has taken hold that online instruction requires at least some special processes of review and approval. We believe that the worst lapses of the past that we heard about in interviews—course LMS sites that are blank on the first day of classes, or online instructors not signing into their courses for weeks at a time—will be kept to the irreducible minimum by online design and quality processes that have gelled into institutional habit. Still, policies are in many cases recent and depend heavily on voluntary compliance and evangelism on the part of department heads and deans.

Incentives for instructors to develop new online courses vary so much that characterizing them overall is difficult, but it seems fair to say that there has been some backwards slippage, and that the incentives are often weak. Thanks to its larger distance education fee, UNLV is able to pay: (1) Schools and Colleges \$2000 for every faculty member completing its e-learning instruction workshop; (2) \$500-\$1000 per credit hour for course development depending on whether the institution retains IP rights; and (3) an additional fee the first time a new distance education course is offered. GBC awards three credits compensation for developing a new

course, while WNC and CSN (which has the highest online enrollments in the system) do not offer development stipends.

As the Nevada state budget recovers, we hope that resources will be available to reinforce NSHE's pursuit of a more consistent e-learning education policy environment, and to improve incentives for faculty taking on the burdens of course development. The disparity in distance education fees (ranging from \$34/credit hour to nonexistent) that creates remarkable contrasts between online learning haves and have-nots invites both greater consistency and a more realistic appraisal of the costs of supporting online learning.

**Finding 1:** *While NSHE is making progress in establishing quality standards for online learning, policies vary widely from institution to institution and the penetration of these quality standards into campus cultures varies widely.*

**Finding 2:** *There are really no incentives for cross campus e-learning collaboration. In fact the designation and protection for "service areas" fosters a possessiveness about student markets that reduces rather than expands educational opportunity. Murky policy as regards the economics of cost sharing when collaboration does occur creates further seams in an NSHE-wide e-learning fabric.*

**Finding 3:** *There are few NSHE-wide mechanisms for researching best practices in modes of e-learning delivery and no rewards for converging on technical or pedagogical standards, where and if best practice is uncovered. Students who brave today's cross campus e-learning divides encounter a patchwork quilt of courses created under the benevolent by uncoordinated aegis of seven disparate design preferences. No single NSHE executive owns responsibility for e-learning.*

**Finding 4:** *Rewards for developing online courses are inconsistent across NSHE, but particularly at the colleges. Faculty and administrators alike report that existing incentives to develop e-learning courses are weak and in some cases ineffective.*

**Finding 5:** *Lack of a clear statewide policy on distance/online education fees contributes to disparity across the system and inadequate online learning support resources at some colleges.*

## Marketing

Marketing – the capability to: (1) understand student needs, preferences, and desires; (2) craft and share a program's value proposition; (3) effectively lever the institution's reputation; (4) identify opportunities in the e-learning market that inform academic program design, and (5) craft marketing messages that reach the right prospective students through multiple channels, effectively handle inquiries, and "convert" prospects into actual students – is not one of higher education's strengths. Marketing of e-learning within NSHE is fragmented, under-powered, left fully to the devices of campus-based e-learning program managers, and its outcomes are left unmeasured.

### Strengths

- NSHE enjoys default status as "the" Nevada higher education system.

- NSHE's institutions have well-defined missions which serve as de facto "brands."
- NSHE outreach initiatives like high school dual enrollment and workforce development programs embed institutions in communities and stimulate awareness.
- There are some local pockets of marketing capability within NSHE, notably in the extension programs at the universities.

### **Challenges**

- NSHE lacks a clear brand other than serving as Nevada's public system of higher education, and it is not particularly identified with excellence in e-learning.
- E-learning is not believed by NSHE to be the emerging educational "new normal". As a result, NSHE colleges and universities are generally inarticulate about e-learning's quality or possible value to Nevadans. Very likely there is significant unrealized opportunity for NSHE institutions to enroll more degree completers – many of whom are thought to be enrolling instead at Western Governors University.
- Lack of good information and good analytics about current e-learners hampers decision-making about programs and limits market research capabilities. NSHE institutions do not either have a statistically valid model/profile of a successful e-learner, or track students who do not complete e-learning courses for follow-up.
- NSHE colleges and universities have little or no marketing capability outside of extension offices and have historically not crafted marketing messages or campaigns for online programs.
- There appears to be no inventory of star faculty, high enrollment courses, etc., that could form the basis of a more "expeditionary" e-learning market approach. This is particularly true of opportunities to enroll out-of-state students.
- There seems to be little urgency within NSHE about developing a competitive strategy to fend off out-of-state providers (e.g., from the University of Phoenix, Western Governors University, Oregon, or new MOOC services).

### **Opportunities**

- The new funding formula's likely feature of permitting NSHE institutions to retain marginal revenue from out-of-state tuition should create a strong incentive to develop marketing messages designed to attract such students.
- Improved market research and marketing capabilities could help NSHE prioritize e-learning investments, raise new revenue streams, and link e-learning program development with specific student needs and strategic goals.
- A healthy and effective private sector now provides colleges and universities with marketing skills focused on e-learning. Partnering with a higher education marketing services provider (such as Academic Partnerships, Bisk Education, Colloquy, Embanet-Compass, Pearson etc.) on a shared-revenue basis could provide sophisticated marketing capabilities without up-front investment.

## Threats

- Continuing to operate in e-learning markets without clear messaging or an overall brand identification creates a vacuum that others may fill.
- Without a better understanding of student needs and desires, there are the dangers of missing opportunities to make NSHE educational opportunities more widely available, missing important revenue opportunities, or investing in e-learning programs, markets or modes of delivery that aren't viable in the marketplace.

## Analysis

Few colleges and universities and fewer public colleges and universities have strong marketing capabilities, and it did not surprise us to find that NSHE fit the pattern. In fact, many disdain marketing. In our interviews we noted both a certain amount of denial that marketing is even necessary (based on high demand for e-learning courses and on the perceived absence of strong competition for Nevadan students), and laments from some that weak marketing is self-defeating. As one distance education coordinator told us, NSHE's system-wide distance education catalog has been abandoned in part because "the marketing piece was missing. We could have done fabulous things, but there was no one there to promote it."

The marketing challenge today is not merely that NSHE has good wares for sale that the right people don't know about. A larger issue is that in an age in which borders are dissolving and geographic advantages mean less and less, NSHE is not strongly identified with e-learning and has not crafted clear messages for its programs. What, after all, does e-learning at NSHE offer that can't be had elsewhere?—convenience? low cost? instant employability? understanding of the Nevada state of mind? NSHE largely leaves these questions unanswered. These questions become particularly problematic as MOOCs and others grab the popular headlines and shape (rightly or wrongly) public perceptions about where e-learning leadership may be.

We do not pretend that a magic wand will produce the resources to develop deep marketing capabilities across all of NSHE's institutions, nor do we believe that improved marketing can fully differentiate NSHE offerings or counter the avalanche of MOOC PR. This is an area where strengthened internal collaboration and external partnerships are probably the most effective paths to improvement. Possible solutions to NSHE's marketing deficit could include partnership with one of the many higher education marketing services providers (as done by Arizona State, California State, and some University of Texas institutions, among others), or creating an NSHE marketing center of excellence supported by member institutions.

**Finding 1:** *Overall, NSHE and its institutions have weak marketing capabilities, especially in online learning. There appears to be no marketing whatsoever of NSHE's e-learning capabilities and offerings as a whole.*

**Finding 2:** *We could not find even the basics of a marketing message – the value proposition – for e-learning at NSHE, or its institutions. Messages that clarify the value of e-learning within NSHE colleges and universities and that sharpen student focus on who should study online could help channel the right kinds of students into the right outlets for e-learning.*

**Finding 3:** *NSHE has not established a strong overall brand identity in e-learning, despite the popularity, effectiveness, and success of some online programs. Many NSHE programs have won national awards, some e-learning programs re nationally ranked. The stature of NSHE e-learning providers is not well promoted.*

**Finding 4:** *NSHE does not appear to be making use of commercial offerings in the marketing arena. The private sector is good at this and an increasing number of companies are helping college and university e-learning programs prosper by providing them with marketing support. The University of Texas system, for example, works with Academic Partnerships, to market UT e-learning programs within and beyond Texas.*

**Finding 5:** *No evident attempt has been made NSHE-wide to identify e-learning program or course opportunities that have high potential to attract regional, national, or global enrollments or to potentially attract large enrollments.*

## Delivery Systems

This is the capability of providing delivery infrastructure with the capacity and reliability needed to support NSHE’s online initiatives today and in the future, as well as the processes and policies needed to develop optimal delivery systems.

### Strengths

- Multiple modalities are available for distance education, including asynchronous and synchronous online and interactive video.
- Conversion to the Instructure Canvas LMS by the community colleges and NSC in a shared use model introduces cutting edge technology, reduces costs, and creates a basis for further collaboration and seamless cross-enrollment by students from these institutions.
- Recent UNR and UNLV migrations to Blackboard Learn eliminate support concerns for previous obsolete platforms.
- Network performance appears to be satisfactory throughout the system and was not raised as an issue by interviewees.
- Implementation of video capture at a number of institutions is building a foundation for “flipped course” pedagogies (less in-class lecture, more experiential learning and interaction).
- A new and common student information system sets the stage for share services beyond the learning platform itself and importantly for the export of key student information into learning analytics resources and NSHE student predictive models.

## Challenges

- There is no central portal or super-catalog containing information about online programs and courses across the NSHE system.
- Lack of a standard LMS forces students to master different systems if they study across the college-university divide.
- Notwithstanding limited examples like the Canvas DE consortium and the Nevada Learning Network (NSC – UNLV), mechanisms for pooling purchasing power systemwide and negotiating for better terms are undeveloped.
- Technical support for online students is seriously limited at many institutions, especially the community colleges.
- Administrator and faculty interviewees complained of a historic lack of easily-obtained data about online students, which frustrates efforts to manage online programs on an empirical basis or to analyze student success issues.
- Use of digital self-study tools, adaptive learning systems, and advanced content like simulations or “gamified” material seems to be modest, unfocused, and scattered.
- NSHE appears to have no learning analytics strategy in spite of the growing technical convergence it is creating. Unaddressed, this is a key challenge. Elsewise, this is a great opportunity!

## Opportunities

- The distance education consortium informally organized around the Canvas LMS could be developed into a broader forum for sharing resources and ideas about online learning.
- Improved data capture and analytics tools in new-generation LMSs could provide much richer information for teaching strategies, interventions, and student success initiatives, provided analytical resources are available and data is productively shared.
- NSHE campuses have set the technical table for a shared learning analytics capability that incorporates data from both the learning management and student information systems.

## Threats

- Years of budget cuts may hamper NSHE efforts to add new programs, services, and technologies.
- Increasingly rich cloud-based technology services may lure faculty away from institutional LMSs and other enterprise tools, changing cost dynamics and demanding new technical and policy responses.
- The bring-your-own-device phenomenon may compound an already problematic lack of standards and challenged and unsustainable support approaches.

- NSHE's ability to incorporate MOOCs or other cloud-based resources into its online curricula and services may require integration projects and architectural changes; NSHE currently does not appear to have the skills or resources to carry these out aggressively.
- NSHE's interactive video systems currently enjoy free access to the state IAV network, and removal or reduction of this effective subsidy would undermine the financial viability of IAV-based education.
- Home access to broadband is limited in some parts of rural Nevada, hampering access to online study. Lack of home broadband is widely pointed to as a key culprit in many e-learning areas and overall in NSHE's 'rural access' challenge and yet no detailed study appears to have been made about where access limitations really exist, whether they are technical (availability of broadband) or economic (affordability of broadband) in nature, and how, in fact, such limitations affect student options, choices, and outcomes.

### Analysis

NSHE has a history of successfully meeting rapidly growing demands for online learning, despite severe budget constraints. The system's institutions have also kept up to date on the LMS front, with the cloud-based Instructure Canvas LMS deployed or in progress at all the colleges and the most recent version of the Blackboard LMS deployed at the universities. The system's centralized maintenance of PeopleSoft also reduces demands on institutional IT staffs. Nonetheless, years of consecutive budget cuts have reduced IT staffs to bare bones levels, calling into question their ability even to sustain the status quo and certainly leaving little margin for innovation. In several cases the heads of IT operations are director-level staff mostly occupied with "keeping the lights on." At some institutions, student technical support is handled through the library rather than a true help desk, and no institution at NSHE provides the kind of 24x7 support that an ambitious online learning operation requires.

These deficits leave NSHE in a weak position to capitalize on emerging trends in technology and online education even where there is long-term promise of cost savings. In particular, student learning analytics, advanced learning technologies, and incorporation of MOOCs and other cloud-based resources will prove difficult or impossible to deploy effectively at current resource levels. In addition, several interviewees lamented NSHE's lack of mechanisms for common purchase of technology products and services. Finally, the absence of detailed information about student network connectivity threatens to misinform policy and resourcing decisions leading to well-intentioned but misdirected spending and in fact failing to address Nevada's real rural access issues in cost effective ways.

**Finding 1:** *NSHE's basic LMS delivery mechanisms are modern and have the potential to improve the student experience and collect vital information about student learning.*

**Finding 2:** *IT staffs have been thinned out too much to support aggressive innovation or expansion of online learning programs.*

**Finding 3:** *NSHE's lack of an effective mechanism to pool demand and jointly negotiate with e-learning vendors contributes to higher learning technology and learning resources costs.*

**Finding 4:** *Investment in analytics tools and skills will be essential if student data is to be brought to bear on student success issues and provide an empirical basis for designing and managing online programs.*

**Finding 5:** *Deficits in NSHE's online learning delivery systems and processes could be confronted at least in part through creative multi-institution collaborations.*

**Finding 6:** *NSHE appears to be committed to facilitating access by all Nevadans to NSHE educational opportunities and has invested significantly in e-learning approaches to manifest this commitment. Some elements of these investments have been made to address student network connectivity constraints and yet NSHE does not appear to have a very concrete picture of the nature of those constraints and how they impact students.*

## Academic and Administrative Support

This is the capability to surround NSHE students and faculty with academic and administrative systems that promote efficiency and success in the online environment.

### Strengths

- Sharing of the Canvas LMS among NSHE colleges and cross-system use of the PeopleSoft campus administration system provide a basis for common identity management, interfaces and information flows.
- Common course numbering throughout NSHE makes it easier to shop for equivalent courses and enhances some aspects of credit transfer.
- NSHE institutions confronting the completion gap between campus-based and online courses have developed a repertoire of interventions that could be exploited more widely through the system.
- A network of academic success centers throughout NSHE institutions provide an organization framework for delivering academic support services to struggling students.
- Campuses like GBC have learned how to address many complex problems – like exam proctoring among geographically-dispersed student populations, possibly setting the stage for crafting NSHE-wide solutions via “centers of excellence.”

### Challenges

- Many NSHE students need assistance developing technical or study skills (including life skills such as time management) before they can successfully navigate the online learning environment.
- NSHE has few NSHE-wide information services and resources strategies. As eBooks, shared library materials licensing, learning objects, and adaptive learning resources play growing roles in student learning experiences, outcomes, and costs, lack of effective systemwide strategies and programs will become a key challenge.

- Though relatively recent developments like the Canvas and Quality Matters consortia provide starting points for collaboration, mechanisms for exchanging support resources and best practices between institutions have been historically weak.
- Critical student support services like admissions, financial aid, and advising often have a campus bias that makes them unavailable or ill-suited to the online student.
- There is no central focal point that provides an NSHE-wide view of available e-learning courses and related services.
- Institution-centric policies and weak integration between institutional systems make cross-institutional study complex, involving students in separate admissions, financial aid complications, and unpredictable transfers.
- Faculty, administrators, and students at the colleges complain that common course numbering does not necessarily result in the unproblematic articulation of credits toward university degree programs.
- NSHE and its institutions either lack policies altogether, or lack clear and consistent policies regarding prior learning, experiential learning, and other alternative paths to credit, which have particular impact on adult online learners and on incoming students taking advantage of MOOCs and other alternative sources of learning. Some faculty are already directing students to MOOC offerings for satisfaction of prerequisite requirements, while others are painting bright red lines to preclude this. Policy needs to be crafted from above, and ideally in anticipation, not in reaction to changing conditions.
- NSHE has no capability to provide 24x7 academic, administrative or technical support to students.

### **Opportunities**

- Because e-learning enrollments are growing significantly faster than are “on-ground” enrollments, improving the e-learning rate of course completion would have a multiplier effect on overall NSHE course completion. As well, e-learning has more cost effective “systemic” strategies for boosting course completion than does classroom based instruction.
- Better integration of systems and processes to create a seamless “NSHE experience” could improve student success and shorten time to degree by allowing optimal student use of the whole system’s educational opportunities.
- Higher non-start and dropout rates among online students could be reduced through well-designed interventions and support services.

### **Threats**

- Left unaddressed, the attrition gap between classroom and e-learning study will result in loss of revenue when the completion-based funding formula comes into force. Even more, the “leverage” mentioned above works both ways: as e-learning enrollments continue to outpace on-ground enrollments, if e-learning completion rates do not rise,

overall completion rates in NSHE will decline, regardless of what NSHE does for on-ground learners.

- Weak and poorly-integrated support services could lead students to online competitors, especially those with a strong services orientation and 24x7 services designed specifically for e-learners.

### **Analysis**

Students in the e-learning environment need more than great content and dedicated instructors to succeed. As many NSHE faculty members told us, lack of basic technical skills—downloading, copying files, keeping track of account names and passwords—may seem so daunting to some students that they never even log in to their first online class. Others may need to be disabused of the idea that e-learning courses are easier than traditional ones, or given a reality check about their time management skills. Still others will benefit from the occasional reminder email or friendly phone call. And, of course, if and when technical literacy gaps have been filled, there is a host of information and scholarly literacies in the digital context that come into sharp relief. New gaps will surface and must be addressed in these critical areas. (e.g. at what stage is copying and pasting, academic plagiarism?)

The good news is that e-learning research shows that appropriate training and support can address these problems and improve completion rates. Even better news is that NSHE institutions have confronted the e-learning completion gap with an impressive range of self-assessments, online tutorials, policies, and intervention protocols. The bad news is that these breakthrough practices are largely localized and their promise for reducing the online completion gap has not been generalized or investigated across the NSHE system.

In addition, e-learning's promise of convenience and easy access is often frustrated by administrative barriers that make little sense to students—separate admission, extra fees, and unpredictable articulation and credit transfer, or full acceptance of course work taken elsewhere by the student's major department (in spite of institution-level credit transfer). Speaking of the relatively minor challenges of enrolling for summer term, one distance educator told us, "Everyone says it is an easy process except for the student. I had three students in the last year who emailed me and said they went to another university because it was easier to enroll at other universities than at NSHE schools." Suggestions for addressing these issues that arose from our interviews ranged from making more consistent use of NSHE's student identifier to improve systems integration, to implementing a common admissions policy for all the two-year colleges, to pursuing a legislative statute to enforce transfer and articulation.

We do not suggest that all barriers to seamless student navigation of the NSHE system or straightforward credit transfer are illegitimate, but as a general principle, we urge NSHE to consider that e-learning will not be fully exploited if it is to remain strictly bound and governed by local viewpoints and interests. Providing the most complete and effective range of services for NSHE students and prospective students will mean widening the range of possible structures for generating and delivering them, including intra-NSHE collaborations, system office centralization, centers of excellence, and partnership with other institutions and commercial providers.

**Finding 1:** *E-Learning calls for both special support services and expanded access to traditional academic and administrative services.*

**Finding 2:** *NSHE experiments and experiences with potentially valuable services that improve e-learning course completion remain localized, and mechanisms for distributing them more widely are informal, insufficient, immature or nonexistent.*

**Finding 3:** *Stove-piped admissions, unclear or unevenly-administered articulation rules, and un-integrated systems present substantial barriers to cross-institutional study even when such study could hasten student progress. Interviews suggest that even once credit transfer for common-numbered courses has occurred, a student's major department may still reject the course for satisfaction of major or distribution requirements.*

**Finding 4:** *NSHE provides very few shared academic and administrative services to e-learners.*

## Vision and Recommendations

### What This Report Is, and What It Is Not

This report culminates nearly six months of work. The report and its companion report *E-learning at NSHE: A Preliminary Snapshot* describe NSHE e-learning progress and challenges in the context of national or international trends in higher education. This report satisfies the contractual request to identify a vision and strategy for e-learning at NSHE that would: (1) be student-centered; (2) promote the success of NSHE's e-learners, and (3) expand educational opportunity and access to NSHE for all Nevadans. This vision and these strategies constitute a coherent set of high level implementation actions that taken together not only respond to NSHE's central goals, above, but position NSHE's institutions to compete effectively in the rapidly changing context of U.S. higher education. Moreover, the adoption of these recommendations will –over time – produce efficiencies in the learning enterprise and reduce perceived quality differences in the e-learning offerings of NSHE's colleges and universities.

The views reflected in this report put forward our best professional effort to accommodate a wide range of experiences, beliefs, assumptions, admonitions, hopes, and caveats of more than 400 members of NSHE's community. Consultants met and corresponded with undergraduate and graduate students, student body presidents, adjunct faculty, regular faculty, faculty senate chairs, e-learning program managers, campus presidents and leaders, and NSHE system office leaders. Key questions bounding the choice of strategic alternatives included: (1) the current state of student behaviors regarding e-learning; (2) the strengths and challenges of existing e-learning and online support services capabilities; (3) the current state of student success within NSHE colleges and universities; (4) the ambitions for NSHE of its leaders and key stakeholders; (5) the expectations of NSHE students and insights about the e-learning behaviors and preferences of K-12 students nationally; and (6) the capacity of NSHE's campus and system leaders, faculty, and staff to undertake bold initiatives in a collaborative fashion.

This report is not a road map, an implementation plan, nor a resource strategy. Those necessary actions collectively constitute a full recipe for change. This report scans the environment, identifies the ingredients to be considered, and describes the meal that may ensue. For this reason, it is essential that the readers of this report recognize that this report is an important first step. It is an outsider's view of NSHE, the e-learning landscape, and the hopes and fears of the NSHE community. This report is indeed a call for a community discussion of a compelling, nascent – and what we believe – imperative vision.

As a vision and strategies and not an implementation and resource plan, this report emphasizes that much is to be done and that time is of the essence. For these reasons, this report recommends only limited, but essential immediate actions. In our professional judgment, NSHE must bring aboard someone to continue this exploration, and to work with and through the NSHE community to (1) calibrate the Board's priorities; (2) identify the sources and uses of needed funds; (3) coordinate the myriad campus and system working groups, and (4) convert a high level vision and strategy into an actionable plan. Indeed, the specific sequencing, shape, priority, resourcing, etc. of the detailed recommendations that follow have been kept intentionally at a high level and somewhat pliable so as to allow the NSHE community (including

the Board) to discuss, iterate and improve it, and to allow for continued study of the fast-changing environment.

## Setting Strategy at NSHE

### What Do We Want: A Vision for E-Learning at NSHE?

While this report makes clear that e-learning encompasses a variety of modes of instructional delivery that are now accepted, established, and growing in the market, we also want to be clear that competition is intensifying and the rate of e-learning enrollment growth may be leveling off nationally and within NSHE. For this reason – and based on the priorities of NSHE – colleges, universities and systems must be careful in their choice of ‘go-to-market’ priorities. In California, the existence of a large underserved market of adults with 2 years or more of education made it easy for that system to set its e-learning sights on serving the “college completer” market. In Nevada, the absence of such a large market and the relatively low rates of student persistence, retention, and graduation suggested a quite different vision, strategy, and approach.

This report concludes that: (1) the need to promote educational opportunity, access, and student success, in Nevada; (2) NSHE students’ clear desire for a radically more mobile, connected, expanded, and seamless educational experience; and (3) the competitive forces developing on NSHE’s horizon demand a greater degree of e-learning programmatic integration across NSHE.

We conclude further that e-learning may become the dominant mode of instructional delivery throughout most NSHE campuses within a decade. In the future, NSHE students should be able to discover on-campus and online learning opportunities within a true common course catalog across NSHE colleges, universities, and DRI, to enroll in these courses without regard to home campus, and to have course credit for satisfactory work accepted fully and seamlessly at the institutional and academic program levels.

This vision summarizes at the highest level our recommendation about what “end-state” NSHE should drive towards. Chancellor Klaich summarized in a simple and powerful way: “We need to serve students in the ways they want to be served.”

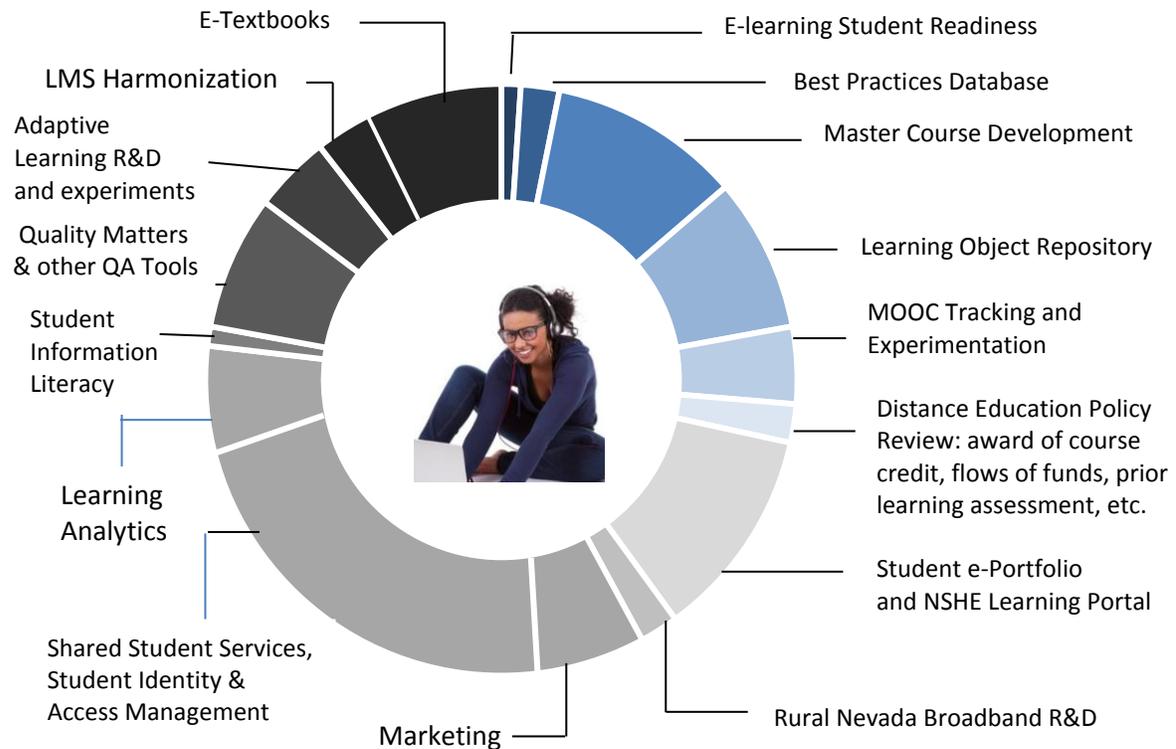
### Where Do We Start?

This report goes on to conclude that if the key outcomes sought relate to improving the student experience, access for all Nevadans to NSHE’s wealth of programs and services, and the success of NSHE’s students, the focus of initial effort should be around lower division undergraduate education, particularly so-called gateway (or bottleneck) course work in the general education curriculum. Distance education students at NSHE and nationally complete courses successfully at rates 10 percent lower than do students on ground. The silver lining in this finding is that systemic improvements in distance education delivery are achievable and any investment that produces across-the-system gains in e-learning outcomes and student success make the entire enterprise more successful.

## What Do We Do?

If our recommendation on the core strategy question: “where do we start?” has been made, the next strategic question is: “What are the key investments we will need to make to promote the lower division student access, experience, and success?”

**Figure 16 A New Learning Ecosystem for NSHE**



### Invest in campus-based capabilities

NSHE colleges and universities have done an extraordinary job building sound and scalable e-learning programs. In many cases, taking e-learning ‘to the next level’ entails leveraged investments in campus-based capabilities.

#### Recommendation 1: Invest in Quality Matters and Other QA Tools and Techniques

Quality Matters (QM) is a rubric consisting of 8 general standards and 41 specific standards used to evaluate the design of online and blended courses. A scoring system and set of online tools facilitate the evaluation by a team of reviewers. The standards promote alignment around: (1) the course overview and standards; (2) learning objectives; (3) assessment and measurement; (4) instructional materials; (5) learner interaction and engagement; (6) course technology; (7) learner support; and (8) accessibility to ensure that students achieve desired learning outcomes. There is direct evidence that application of QM design and review standards and

processes improves student completion rates. Most NSHE colleges and universities have adopted this program but are poorly resourced to implement the program on a widespread, rapid and ongoing basis. Funds need to be identified to support the requisite peer review and other program costs associated with QM. Creating an NSHE-wide pool of skilled and resourced peer reviewers will both reduce implementation bottlenecks and avoid the higher cost of using peer reviewers from the QM nation resource pool.

### **Recommendation 2: Invest in Learning Management System (LMS) Harmonization**

NSHE campuses operate the Instructure Canvas LMS, or the Blackboard Learn, LMS. One NSHE student body president likened moving across LMS platforms to having to “learn to learn, all over again.” At some campuses, like NSC, informal and incompletely funded efforts are being made to “harmonize” aspects of these two platforms to reduce the challenges students face as they move across platforms. We recommend that funds be set aside and earmarked specifically for such harmonization. NSHE does not need to standardize on one platform, but does need to take measures to make student movement across platforms painless.

### **Recommendation 3: Invest in Distance Education and Related Policy Review**

Many of NSHE’s policies related to e-learning are very enlightened with respect to students’ desire for access to and credit for courses delivered across NSHE locations. Some policies, on the other hand, need to be revisited. For example, policies that guide or circumscribe action based on the notion of service areas will not serve students or campuses well in an environment where MOOCs or other providers operate outside such internal constraints. Credit transfer policy and practice overall must be re-examined as competition intensifies, as American Council on Education (ACE) anoints MOOC courses as creditworthy, and as the prior learning certification movement gains momentum. Evolving Nevada funding policy is also enlightened insofar as it fosters entrepreneurial initiative within NSHE institutions. Campus ability to retain out-of-state tuition along with the absence of caps on such out-of-state enrollments creates an opportunity. NSHE distance education policies should be reviewed when the new funding formula is finalized to ensure the incentives to innovate and “export” are strongly reinforced.

### **Invest in New Sharable Capabilities**

In a nutshell, money is too scarce and the pace of change is too fast to allow under-funded NSHE colleges and universities to once again create and re-create individual solutions to common problems. The road map to NSHE’s e-learning future is filled today with many white spaces – areas of need that have not yet matured into campus capabilities. White spaces are less vulnerable to the politics of incumbency. Investing in collective action in these areas is likely to be welcomed. Every NSHE campus will need to use – rather than develop – new capabilities if they are to compete effectively with proprietary institutions, Western Governors University, MOOCs, and the maturing online programs of a growing number of traditional colleges and universities.

### **Recommendation 4: Invest in Learning Analytics**

Learning analytics – the use of so-called big data and statistical techniques to forecast and thereby influence outcomes – is the single most promising breakthrough capability related to

student success in U.S. higher education. Considerable public investment (Gates Foundation, WICHE-WCET), and private investment by colleges, universities and firms like IBM, SAS, Pearson, and others is making it possible for postsecondary institutions to improve their admission yields, selectivity, and rates of persistence, retention, and graduation at the undergraduate level. Effective investments in model building, data management, alerts, improved counseling, admissions, interventions, and change management have a very high potential financial, political, and workforce return.

#### **Recommendation 5: Invest in E-Textbooks**

According to the Atlantic Monthly, the cost of college textbooks has risen by 812% since 1978. (The Atlantic, 2013). The National Association of College Stores estimates that the average college and university student spends \$655 per year on textbooks and course supplies. This is a big ticket expense, since the average 2-year public college student pays \$3,100 per year for tuition. Indiana University now supports 8,000 of its students through an e-textbook program that saves students one-half or more of these costs. Moreover, research is demonstrating that electronic content has clear benefits over printed texts for student engagement and learning outcomes (Dennis, et al., 2012). In the past year, the number of those who read e-books increased from 16% of all Americans ages 16 and older to 23%. At the same time, the number of those who read printed books in the previous 12 months fell from 72% of the population ages 16 and older to 67%. (Pew Internet and American Life, 2012). We recommend that NSHE evaluate and pilot a significant system-wide program in e-textbooks that leverages the insights being gained by Indiana University and others. This strategy needs to incorporate both proprietary publisher and open education resources, while recognizing the central role played by faculty in this essential area.

#### **Recommendation 6: Invest in a Shared Student Learning Portal and Student e-Portfolio**

The central aspect of the proposed NSHE e-learning vision relates to creating a student-centric online environment that promotes the widest and most realistic student access to all resources within NSHE. This vision not only satisfies NSHE's drive to improve the student experience, but is intended also to promote student success by easing bottlenecks in course availability at any single NSHE institution. NSHE policy already addresses common course numbering, articulation, and credit transfer well. Opinions however are strongly mixed on how consistently this policy has been implemented. This recommendation is to create and deploy the technical and procedural capabilities – and the academic processes – that will animate the existing policies and lower the barriers that students face as they try to avail themselves of existing policy rights. Looking ahead, this recommendation is for NSHE to develop or acquire a leading-edge environment for students to discover and understand learning opportunities – and policies that apply to them – across NSHE and, when appropriate, to enroll in e-learning courses across NSHE institutions and have their credits applied toward their degrees and majors without friction. Looking even further ahead, NSHE should facilitate student access to e-portfolios that empower students to maintain a full and controllable record of their curricular and co-curricular achievements. As time goes on, students will likely take more and more of their course work outside their home institutions. NSHE policies for credit transfer, and its tools, systems, and processes should be designed and developed to anticipate this likelihood. The goal of this recommendation is to make student access to approved courses (general education) as easy at

any institution as it is at the student's home institution. Note: achieving this simple goal is not simple, or inexpensive.

### **Recommendation 7: Develop an NSHE-wide Shared Student Services Strategy**

Every NSHE college and university has a large portfolio of student services that were engineered – in the main – for an on-campus student consumer. Such services include counseling, tutoring, faculty office hours, technology support services, financial aid, and many others. NSHE colleges and universities have figured out ways to build on the ground-based foundations they have laid, but in many instances, students report that consuming services at a distance can be frustrating and difficult. Even when student services have been extended into the online environment well, they rarely face the future wherein student services will be hosted “in the cloud” and available to them on either a self-service basis, or on a 24x7 basis. Proprietary universities began online and their support services are already online first, and often on a 24x7 basis. MOOCs are incorporating these notions of scalability and cloud delivery and 24x7 availability into their ecosystems. NSHE campuses cannot on limited funds each devise services that will meet this competitive challenge while continuing in many cases to attend well to on-campus students whose physical presence makes them an unarguable priority. Sharing forward-facing services seems to be the only viable path forward for NSHE's e-learning enterprise. This report concludes that it is premature to recommend specific services, but to indicate that the online student services world is changing fast as well. Students at California State University Monterey Bay (CSUMB), call 24x7 to the CSUMB call center in Florida, where professionals from a private company named Colloquy address a variety of their academic, financial, and other concerns, 24x7. This is only to say that radical change is possible, is already occurring, and will define higher education's competitive landscape. If NSHE colleges and universities cannot ‘go it alone’, we recommend that a review be organized immediately to identify: (1) strong candidate areas for service sharing; (2) the forward looking vision for each candidate area; (3) models or approaches for effecting changes; and (4) a prioritization and budget for moving forward toward building a shared services ecosystem on behalf of NSHE's e-learners. The academic literature is not mature in this area, but the anecdotal evidence is strong that the quality and vitality of the online services environment factor heavily into the success of fully online e-learners.

### **Recommendation 8: Invest in a Database of Effective Practices in E-Learning and in an E-Learning R&D capability**

NSHE is an e-learning leader and many NSHE online programs are nationally ranked or honored and many NSHE e-learning professionals are highly respected within their professional communities. While the NSHE e-learning professional leaders know one another, they are not a professional community. They do not meet with enough frequency and hence the successful insights, tools, programs, and practices they have invested in generally move very slowly, if at all, across institutional boundaries. We recommend strongly that the top e-learning leaders from NSHE campuses meet regularly and that they meet on regular occasions as a group with their chief campus academic officers. Further, we recommend that NSHE invest in a database of effective practices that the e-learning directors would guide and populate with insights from their practice.

This group as well should provide the steering mechanism – with NSHE system coordination – for NSHE-wide monitoring, evaluation, reporting, and experimentation in key evolving areas

such as MOOCs, adaptive learning, and others. In our professional judgment, MOOCs are an emergent technology and practice and therefore in flux and immature. They are, though, maturing quickly and must be monitored. In addition, experiments like those at Harvard Law and San Jose State University should be considered within NSHE. Only from active experimentation with new delivery modes and methods will NSHE be in a position to make future investment decisions based on data, rather than on fears and hopes, as they are today. The NSHE faculty leadership, of course, needs to participate fully in experimental design, design of specific offerings, and evaluation of learning results.

While R&D may seem like a luxury expense in a state that values and expects austerity in its public services, it is worthwhile noting that NSHE is failing to capitalize on the huge flow of investment and philanthropic capital that is flowing into the e-learning arena. The rather weak showing of NSHE as a grant maker and recipient has everything to do with the institution operating in austerity with a necessary focus on keeping the trains running, rather than inventing Star Trek's 'holodeck.' Despite NSHE's funding, very good work is going on in adaptive learning and other leading areas. Investment in a significant R&D program is not only good for all the competitive reasons outlined, but because it will position NSHE to receive funding from NSF, Gates, MacArthur, Lumina, and others who are keenly interested in addressing the same challenges facing NSHE and Nevadans.

#### **Recommendation 9: Invest in Student Readiness for E-Learning**

While the investment in learning analytics will sharpen the focus on those factors that specifically contribute to, or erode NSHE students' success, it is very likely that overall preparedness will rise to the surface as a primary e-learning risk factor. Nearly all the academic research reveals that student income and academic preparation contribute to risk – at the lowest income levels. These risks are compounded when learning occurs remotely. There are – within NSHE and nationally – good practices for addressing some of these risks. Collective investment of resources (people and money) in the development of tools, processes, systems and practices designed to skill up prospective e-learners in the technical, academic, information literacy, and other aspects of the 'road ahead' could cost effectively contribute in very positive ways to successful e-learning course completion rates. Award winning programs like that at the University of Central Florida have gone far in improving e-learning course completion rates and other markers of student success.

#### **Recommendation 10: Invest in Adaptive Learning**

The shift to e-textbooks is much more than a shift from ink on paper to pixels on screens. Digital content can be multi-modal (text, voice, video) and interactive. Student interaction with learning resources is a key leg of a stool that includes teacher-student interactions, and student-to-student interactions and may be the most influential contributor to student learning outcomes. In a nutshell, e-textbooks are becoming smarter and in many cases already, measure and report student time-on-task, administer and score online assessments, and dynamically create alternative pathways and timetables based on the outcome of these student assessments. These technologies have a high potential to radically improve student success as every student can expect over time to have a virtual tutor, and to alter and improve the economics of teaching and learning while improving the experience of teaching and learning. NSHE colleges and universities need to track and monitor developments in this arena to

ascertain where, when, or whether “smart content” – and the pedagogies associated with it – should be created, licensed, and integrated into e-learning delivery. The state of the art of adaptive learning tools is improving fast, with massive investments by private equity firms and venture philanthropists like Gates.

### **Recommendation 11: Invest in Shared Marketing**

The focus of this Report has been on changes that NSHE can and should make to promote student centered-ness, access, and success. It has not been focused on either enhancing the reputation of NSHE institutions, in enlarging their footprint, or on generating new net revenues. The implementation of the recommendations of this Report will continue NSHE’s standing as an e-learning powerhouse into the next decade. This fact, and a new funding formula that may make it possible for NSHE components to retain tuition from out-of-state sources form the basis of this recommendation. Like nearly all colleges and universities, NSHE institutions are not “market savvy.” We recommend that NSHE retain the services of a growing number of firms who can: (1) identify NSHE courses or programs that have appeal beyond Nevada’s borders; and (2) identify target markets and marketing plans to win enrollments from across Nevada’s borders. We further recommend that when and if such opportunities are identified that NSHE create and manage an internal pool of venture funding to support expeditionary marketing efforts to win such cross border enrollments. Such funds should be managed like a true venture capital pool with planned returns on investment so that such funds can be available on a sustainable basis and so that NSHE educators are encouraged to foster entrepreneurial skills alongside their more traditional academic skills.

### **Recommendation 12: Continue to invest in rural broadband networking R&D**

Improving the quality of NSHE e-learning offerings and enhancing the availability of online tools, services, and capabilities designed to promote student engagement, satisfaction, and success will not meet the needs of rural Nevadans who do not have access to broadband networking. Access to networking is a complex issue that includes both a technical component and a financial component. NSHE information technology authorities and those of the state of Nevada have done much to promote rural access to broadband networking. Much remains to be done. Our review of Nevada network coverage has been superficial, but suggests that broadband availability in rural Nevada is not bad. We suspect that among families with college-bound or college enrolled students, network availability and affordability are not bad. These are impressions and suspicions, and not findings. That said, we do find that some of NSHE’s historical investment in e-learning modes and approaches hinges on the assumption of unavailable broadband. We recommend that deeper study be undertaken to develop a robust and data-driven understanding of broadband coverage among NSHE students and prospects. Further we recommend that NSHE continue to be an active advocate for public extensions of broadband connectivity and that NSHE continue to follow new technologies such as super wifi to promote the continued expansion of broadband – and therefore educational – access throughout the state.

### **Recommendation 13: Invest in a repository of learning objects**

All e-learners – whether distance learners, or those in classrooms – are benefitting from the proliferation of highly granular digital learning objects. Students can now reinforce traditional

texts and classroom discussions with video clips, simulations, interactive graphs and charts, infographics, and other tools and content that address the variety of learning styles and preferences of our diverse student body. Today, the number of open and proprietary learning objects of this kind is huge and many are not curated. This means that there is no understanding of where they came from, whether or not they are accurate or up to date, whether or not their web links are live, broken, and accurate, and so forth. Moreover, good and well-vetted learning objects are not always easy to find. A well curated collection of properly evaluated learning objects can make a material and positive difference in student mastery of learning concepts and therefore to their success. To fully realize the benefits of an investment in digital learning objects repositories resources need to be made available to invest in acquiring open and commercially-licensed content, in managing a collection and making it accessible to *bona fide* members of the NSHE community, and in training of both faculty and students so that the collections are well and fully used.

### What Approach(es) Do We Take?

The recommendations above suggest what strategies NSHE should invest in. The following recommendations raise the issue of what approaches NSHE and its component institutions should take to implement these recommendations most effectively. There is a finite set of choices available to NSHE or any e-learning provider. They are straight forward and include:

In evaluating these approaches, four considerations stand out.

- First, existing NSHE campus e-learning providers have done a very good job growing e-learning programs at impressive rates. In a “settled” environment, an approach of making continuous improvements might be a realistic option for NSHE.
- Second, e-learning within NSHE exhibits “local sub-optimization.” The high degree of e-learning fragmentation that exists across NSHE today has deleterious effects on both students and NSHE’s longer term capacity to compete effectively. NSHE campuses use widely varying distance education fee levels to take widely varying approaches to e-learning, with wide variances in perceived quality, and mixed campus willingness to transfer credits seamlessly. Uneven spending, legacy approaches, mixed methods, and other idiosyncrasies leave NSHE and Nevadans with a patchwork quilt of mismatched e-learning offerings characterized by highly visible “seams” that discourage students from cross registering and thereby slow or stall their degree progress. From the student perspective, the system is not a system. From the taxpayer perspective, there is duplicative spending and mixed success on student outcomes.
- Third, we cannot escape the conclusion in the 5-10 year planning horizon, small-scale providers of e-learning programs and courses will be displaced by large systems, consortia, MOOCs, and other providers that place seamless student mobility across a broad array of course, program, and support options at the center of their operating models. Call this a competitive imperative. Or the disruption imperative.
- Fourth, while a virtual college addresses the considerations above, it fundamentally negates NSHE campus’ historic e-learning success, presents Nevadans with a competing educational “brand” (as opposed to e-Ncore which is an additional student option within an existing campus brand), and likely would compete for resources and students with existing NSHE campuses. Such a solution could address the problems that prompted this study, while creating new and bigger problems.

#### **Recommendation 14: Develop e-Ncore.**

Based on our research, reading, discussions, and advice from the NSHE advisory group, we recommend that NSHE develop e-Ncore, a centrally-coordinated, but locally crafted catalog of master general education courses. We recommend that NSHE coordinate the development of the financial model, cost and gain sharing model, support model and governance structure. e-Ncore assumes and leverages the prior recommendations in this report, adding to that the investment in a standard, state-of-the art set of master templates that incorporates the best thinking of NSHE faculty across the system, and the best professional efforts of NSHE instructional design and development professionals across the system. This effort must be guided by a set of principles including:

- (1) resourcing – the premise of e-Ncore is the design and development of courses that are as good as the best found in NSHE’s competitive landscape. This will require investment and cannot be achieved on the backs of already fully utilized program staff and faculty. Funds for course relief and backfilling of administrative roles must be available.
- (2) preservation of campus autonomy and student choice: the creation of the e-Ncore course portfolio does not preclude NSHE campuses from developing local alternatives.
- (3) courses developed for and delivered through e-Ncore must be fully accepted for course credit and for satisfaction of degree and/or major requirements without negotiation.
- (4) faculty developers of e-Ncore courses should be reasonably compensated for their work, and rights to ensuing intellectual property should vest in NSHE.
- (5) e-Ncore must develop standards of skill expected of those who voluntarily teach master classes through e-Ncore and must certify e-Ncore instructors, and assess their performance in a credible but “lightweight” way.

#### **How do we Implement the e-Ncore Approach?**

If NSHE moves forward to implement the e-Ncore approach, there are strategic choices to be made. These choices carry both substantive and symbolic implications. These choices include:

- Centralization of e-Ncore operations in the NSHE system office.
- e-Ncore policy and operational program coordination and funding through the NSHE system office. e-Ncore operations performed on NSHE campuses.
- e-Ncore policy and operational program coordination and funding through the NSHE system office. e-Ncore operations performed through a northern and southern center of e-learning excellence
- e-Ncore policy and operational program coordination and funding through the NSHE system office. e-Ncore operations performed through one or more commercial providers.

**Recommendation 15: Create Centers of e-Learning Excellence to Support e-Ncore**

There is reasonable and responsible anxiety expressed as strategic options came into focus through this project that the NSHE system office would in effect usurp roles currently played by NSHE colleges and universities. We recommend that NSHE adopt an approach that simultaneously incorporates and builds on campus expertise, and withstands the natural campus pressures toward fragmentation and idiosyncratic solutions.

We recommend that e-learning operations be – to a partial extent – consolidated in Washoe and Clark counties where 88 percent of Nevada’s population is located. Today, nearly all NSHE e-learning operations are under-staffed, some critically so. WNC has long supported DE enrollments with only one technical staff member. This is simply not acceptable in institutions where one of three enrollments is via distance education. Thoughtful consolidation of e-learning operations in these centers of NSHE activity will allow the creation of a critical mass of capabilities, career paths for professionals within these organizations, and the means to achieve consensus on best practices that incorporates the views from all NSHE campuses.

In this model, e-Ncore program priorities would be arrived at collaboratively through an inclusive governance process facilitated by a new senior level member of the NSHE system staff. This governance would include all NSHE components at the senior executive level. This steering group would set priorities, authorize resources, monitor progress of priorities, and evaluate the impact of programs and investments on key student success, centrality, access, and other goals. Financial resources would be managed in a portfolio fashion and allocated to either (or both) of the regional centers of excellence, or to commercial providers. Key investment decisions would be made through collaborative program governance. The operation of new services or offerings would be provided through the NSHE system office, one of the centers of excellence, or through a commercial or open source solution provider, based on criteria determined through collaborative decision making.

As a part of this transition, we recommend that NSHE Regents and Chancellor review the current fee structure for distance education at NSHE colleges and universities. The fee variances are enormous and in fact contribute to considerable dysfunction in NSHE’s e-learning mix. E-learning – in the coming decade – will need to be funded on a sustainable basis and today, funding for this critical capability falls below the threshold of “austere” and is unsustainable. Notwithstanding the e-Ncore and this recommendation, NSHE campuses will need local e-learning support operations. The specifics about how much activity and resource can and should be consolidated and how much should be left on campus will be a challenging negotiation. This negotiation will depend on leveling the playing field on current funding, which in turn depends on fees.

**How do we Move Forward?**

For NSHE colleges, universities, and the DRI to begin to operate in a seamless way to serve students the way they want to be served will require considerable coordination and collaboration. As suggested, while achievement of this vision demands a reduction in the existing e-learning program fragmentation, it does not demand centralization – a loaded term in higher education. As described, we believe that there are collaborative bridges that can and must be built to move forward on building the capabilities that are recommended in this Report.

These bridges can and must be built with due respect for NSHE campus histories, achievements, rights, and inter-dependence. UC President Clark Kerr labeled this “unity and diversity.” That said, we reiterate our emphatic belief that finding new ways of delivering e-learning today is as important for NSHE and Nevadans, as it was for the steel and auto industries when disruption was upon them. NSHE is vulnerable but it is capable. It must invest in the capacity to change and it must find a way to set aside parochial interests.

### **Recommendation 16: Hire an E-learning Program Officer and Create an Influential Governance**

This Report and its recommendations taken as whole are ambitious, transformational, challenging, perhaps even daunting. They will not “do themselves.” These recommendations, while specific, have been crafted in the knowledge that conditions within and without NSHE are fluid and dynamic. These conditions will change and within bounds these recommendations may change with them. This specific recommendation really should not be negotiated. It is trite but still necessary to say that hard and important things only get done because people get them done. We observe that NSHE is overall under-funded and again and again we met wonderful people who are now performing jobs that three years ago were performed by 3 or 4 people. Spreading this new workload among the already too-busy staff and faculty at NSHE will not produce good results. We urge NSHE to hire a senior-level program officer to move these 20,000 foot recommendations into action.

The degree of difficulty of the recommended actions is doubled by the recommendation that this work be undertaken as a collaborative effort between the NSHE system office and its components. Knowing this, we recommend that high level attention be given to the governance that the future incumbent will need to steer such a collaborative. At California State University Online, a board of directors was created consisting of 7 campus presidents, two executive vice chancellors from the system, and the system CIO. The board is chaired by a CSU campus president. This is the kind of engagement this effort will need. E-learning is no longer an adjunct activity at NSHE and the very fate of NSHE now depends on how effectively it builds from its existing foundation. This project has generated momentum (and controversy of course). It is essential to build on this momentum – with haste. Doing this demands the full time attention of a technically capable and collaborative-by-nature executive who can earn the trust of NSHE’s board, students, faculty, staff, and leadership and of the people of Nevada.

## Summary of Recommendations

**Figure 17 Summary of Recommendations and Areas of Impact**

Recommendation	Area of Impact					
	Student Success	Student Centricity	Student Access	Course Quality and Competitive -ness	Institutional Costs or Revenues	Student Costs*
E-Textbooks	√	√	√	√	√	√
Shared Services	√	√	√	√	√	√
Learning Analytics	√	√			√	
Shared Marketing			√	√		
LMS Harmonization	√	√				√
Learning Portal/Shared Catalogue/ePortfolio	√	√	√			√
Learning Objects Repository	√	√	√	√		√
Quality Matters and Other Quality Assurance	√	√		√		
E-Learning R&D**	√	√	√	√	√	√
Rural Broadband R&D			√	√		
Distance Education Policy Review	√	√	√	√	√	
E-Learning Best Practices Database	√	√	√	√	√	√
Adaptive Learning	√	√	√	√	√	√
General Ed Master Classes	√	√	√	√	√	√
Student E-Learning Readiness and Information Literacy	√	√		√	√	
e-Learning Centers of Excellence	√	√	√	√	√	√
e-Ncore	√	√	√	√	√	√

\*Student costs include financial and opportunity costs

\*\*Including MOOC tracking and experimentation

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## Appendix 1 NSHE E-Learning Advisory Committee

Jane Nichols, Interim Vice President of Academic Affairs, TMCC, Chair

Connie Capurro, Vice President of Academic & Student Affairs, WNC

Renee Davis, Director of Student Affairs, NSHE

Darren Divine, Vice President of Academic Affairs, CSN

Mark Fink, Director of Distance Education, UNLV

Lisa Frazier, Director, Curriculum Development, GBC

Christian Fritsen, Interim Vice President of Academic Affairs, DRI

Fred Holman, Vice Provost, Extended Studies, UNR

Sam McCool, Manager of Instructional Technology, NSC

Daniel Neverette, Vice President for Finance and Administrative Services, WNC

Alexander Porter, President Student Body, GBC

Brad Summerhill, Professor, TMCC, and Chair – NSHE Faculty Senate Chairs

John White, Executive Vice President & Provost, UNLV

Stephen Zideck, Director, Information Technology Service, TMCC

Steven Zink, Vice Chancellor for Information Technology, NSHE

## Appendix 2 NSHE Institutions

NSHE Institutions	
Research Universities	
University of Nevada, Las Vegas	Founded in 1957 and located in Las Vegas <sup>2</sup>
University of Nevada, Reno	Founded in 1874 as the State University of Nevada in Elko, NV, moving to Reno in 1885, the University of Nevada, Reno is the oldest university in the state. <sup>3</sup>
4-year College	
Nevada State College (NSC)	The most recently established institution within NSHE, Nevada State College opened its doors to students in 2002. <sup>4</sup>
2-year Colleges	
College of Southern Nevada (CSN)	College of Southern Nevada is the largest higher education institution in Nevada and has three main campuses: the Charleston Campus located in Las Vegas operating since 1988; the Cheyenne campus located in North Las Vegas and opened in 1974; and the Henderson campus located in Henderson built in 1981. CSN also has 8 academic and learning centers. <sup>5</sup>
Great Basin College (GBC)	Great Basin College opened in 1967, with its main campus located in Elko, Nevada. Serving a large part of rural Nevada, GBC has additional centers with facilities in Battle Mountain, Ely, Pahrump and Winnemucca, plus additional satellite sites. <sup>6</sup>

<sup>2</sup> <http://www.unlv.edu/about>

<sup>3</sup> <http://www.unr.edu/discover-nevada/university-history>

<sup>4</sup> <http://www.nsc.nevada.edu/17.asp>

<sup>5</sup> <http://www.csn.edu/pages/162.asp>, <http://www.csn.edu/about/locations/westcharleston.asp>, <http://www.csn.edu/about/locations/cheyenne.asp>, and <http://www.csn.edu/about/locations/henderson.asp>

<sup>6</sup> <http://www.gbcnv.edu/about/overview.html> and <http://www.gbcnv.edu/campus/>

NSHE Institutions	
Truckee Meadows Community College (TMCC)	Originally established in 1971 and located in Reno, TMCC started as the Western Nevada Community College with the parent campus located in Carson City. In 1979, the Board of Regents split Western Nevada Community College and established Truckee Meadows Community College. TMCC became the fourth community college within the Nevada System of Higher Education. <sup>7</sup>
Western Nevada College (WNC)	Established in 1971, Western Nevada College is based in Nevada's capital, Carson City, with rural campuses in Fallon and Minden. Western has also developed teaching centers in many smaller Nevada communities, including Fernley, Hawthorne, Lovelock, Smith Valley and Yerington. <sup>8</sup>
Research Institute	
Desert Research Institute (DRI)	Originally established in 1959 as a research division of the University of Nevada, Reno, the Desert Research Institute became an autonomous research division in 1969. The DRI conducts " cutting-edge applied research in air, land and life, and water quality across Nevada, the United States and on every continent." DRI has campuses in Reno and Las Vegas. <sup>9</sup>

<sup>7</sup> <http://www.tmcc.edu/about/history/>

<sup>8</sup> <http://www.wnc.edu/about/history.php>

<sup>9</sup> <http://www.dri.edu/about-dri/dris-history> and <http://www.dri.edu/about-dri>

## Appendix 3 Quality Matters Rubric Standards 2011-2013

Quality Matters (QM) is a faculty-centered, peer review process that is designed to certify the quality of online and blended courses. There are three primary components in the Quality Matters Program: The QM Rubric, the Peer Review Process and QM Professional Development. The Quality Matters rubric (below) and peer review and training processes are used widely in K-12 and higher education and are considered best practices.

### Course Overview and Introduction

- 1.1 Instructions make clear how to get started and where to find various course components.
- 1.2 Students are introduced to the purpose and structure of the course.
- 1.3 Etiquette expectations (sometimes called “netiquette”) for online discussions, email, and other forms of communication are stated clearly.
- 1.4 Course and/or institutional policies with which the student is expected to comply are clearly stated, or a link to current policies is provided.
- 1.5 Prerequisite knowledge in the discipline and/or any required competencies are clearly stated.
- 1.6 Minimum technical skills expected of the student are clearly stated.
- 1.7 The self-introduction by the instructor is appropriate and available online.
- 1.8 Students are asked to introduce themselves to the class.

### Learning Objectives (Competencies)

- 2.1 The course learning objectives describe outcomes that are measurable.
- 2.2 The module/unit learning objectives describe outcomes that are measurable and consistent with the course-level objectives.
- 2.3 All learning objectives are stated clearly and written from the students’ perspective.
- 2.4 Instructions to students on how to meet the learning objectives are adequate and stated clearly.
- 2.5 The learning objectives are appropriately designed for the level of the course.

### Assessment and Measurement

- 3.1 The types of assessments selected measure the stated learning objectives and are consistent with course activities and resources.
- 3.2 The course grading policy is stated clearly.
- 3.3 Specific and descriptive criteria are provided for the evaluation of students’ work and participation and are tied to the course grading policy.
- 3.4 The assessment instruments selected are sequenced, varied, and appropriate to the student work being assessed.
- 3.5 Students have multiple opportunities to measure their own learning progress.

### Instructional Materials

- 4.1 The instructional materials contribute to the achievement of the stated course and module/unit learning objectives.

- 4.2 The purpose of instructional materials and how the materials are to be used for learning activities are clearly explained.
- 4.3 All resources and materials used in the course are appropriately cited.
- 4.4 The instructional materials are current.
- 4.5 The instructional materials present a variety of perspectives on the course content.
- 4.6 The distinction between required and optional materials is clearly explained.

### **Learner Interaction and Engagement**

- 5.1 The learning activities promote the achievement of the stated learning objectives.
- 5.2 Learning activities provide opportunities for interaction that support active learning.
- 5.3 The instructor's plan for classroom response time and feedback on assignments is clearly stated.
- 5.4 The requirements for student interaction are clearly articulated.

### **Course Technology**

- 6.1 The tools and media support the course learning objectives.
- 6.2 Course tools and media support student engagement and guide the student to become an active learner.
- 6.3 Navigation throughout the online components of the course is logical, consistent, and efficient.
- 6.4 Students can readily access the technologies required in the course.
- 6.5 The course technologies are current.

### **Learner Support**

- 7.1 The course instructions articulate or link to a clear description of the technical support offered and how to access it.
- 7.2 Course instructions articulate or link to the institution's accessibility policies and services.
- 7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help students succeed in the course and how students can access the services.
- 7.4 Course instructions articulate or link to an explanation of how the institution's student support services can help students succeed and how students can access the services.

### **Accessibility**

- 8.1 The course employs accessible technologies and provides guidance on how to obtain accommodation.
- 8.2 The course contains equivalent alternatives to auditory and visual content.
- 8.3 The course design facilitates readability and minimizes distractions.
- 8.4 The course design accommodates the use of assistive technologies.

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Quality Matters Rubric Standards 2011-2013 edition

## Appendix 4 Richard N. Katz & Associates Team

Richard N. Katz & Associates was incorporated in 2011 to help colleges and universities devise and implement effective strategies, plans, technologies, and practices in the context of a changing landscape. Since its founding, Katz & Associates has helped numerous clients including: Anne Arundel Community College, California State University Office of the Chancellor, Chinese University of Hong Kong, Contact North (Ontario's largest distance education aggregator), Gates Foundation, Griffith University (Australia), Kaplan Global Ventures, Microsoft Corporation, National University of Singapore, SWITCH (Swiss Research and Education Network), University of Lausanne, University of Ontario Institute of Technology, the University of Texas System, and others.

The Katz & Associates team is comprised exclusively of senior-level university and consulting executives each with more than twenty years of experience. The NSHE team from Katz & Associates included:

**Dr. Robert Albrecht** is a Principal Associate. Albrecht began his academic career on the faculty at the University of Chicago. Albrecht was a tenured member of the Department of English at the University of Oregon, where he taught American literature courses and became dean and ultimately vice provost. In 1982 he was appointed vice president for academic affairs at the University of Northern Colorado. In 1987 he became deputy commissioner for academic affairs in the Montana University System, returning to Colorado in 1989 to become associate vice president at the University of Colorado. In 1996 he assumed the leadership of Western Governors University until his retirement as Chancellor Emeritus in 2000. He has written extensively on distance learning and technology-supported learning. He is considered one of world's pioneers and foremost authorities on competency-based education.

**Richard N. Katz** is President of Richard N. Katz & Associates, a consulting firm focused on information strategy and institutional performance management in higher education. Katz is also executive vice president of Nuventive, LLC, a leading supplier of institutional performance management software in higher education. From 1996 to 2011, Katz was vice president of EDUCAUSE where he oversaw the creation of the EDUCAUSE Annual Conference and its editorial flagship, *The EDUCAUSE Review*. He founded and directed the EDUCAUSE Center for Applied Research. He served 14 years in a variety of leadership positions with the University of California Office of the President. He is the author or editor of seven books and more than 75 articles, monographs, and book chapters on the management of IT in higher education. His book *Dancing with the Devil* was named one of the most influential higher education books of 1999.

**Judith A. Pirani** is a Senior Associate and also president of Sheep Pond Associates. Her expertise focuses on educational technology issues. Sample research includes the use of e-learning to improve employee efficiencies and sales demand, the marketability of course management systems for corporate training applications, and website development strategies in higher education and government institutions. Ms. Pirani is a fellow of the EDUCAUSE Center for Applied Research (ECAR) and co-authored several ECAR studies including *Wireless Networking in Higher Education*, and *Supporting E-Learning in Higher Education*, as well as more than 20

ECAR case studies and research bulletins. Previously Pirani was Vice President at Lyra Research and Giga Information Group, where she managed worldwide research practices in digital imaging technologies. Ms. Pirani was also a research analyst with IDC.

**Peggy G. Rogers** is Chief Operating Officer and Associate. Prior to joining Richard N. Katz & Associates, Rogers was a project leader and principal systems analyst at the University of California Office of the President for 30 years. Rogers led the University of California's development and maintenance of endowment accounting systems, title code systems, annuitant payroll systems, and retirement system participant recordkeeping systems.

**Iris Stewart** an Associate of Katz & Associates and is director of administrative operations in the Information School at Syracuse University. She is responsible for the coordination of iSchool internal administrative departments working in concert, providing services that further iSchool objectives and are in compliance with university rules and regulations. Stewart works closely with senior leadership across the university to develop and implement operational and organizational plans to manage growth and provide the best possible administrative services to the University's programmatic mission. Stewart is currently completing her Masters in Information Management and Telecommunications.

**Dr. Ronald W. Yanosky** is a Managing Associate. At Katz & Associates, Yanosky has played leadership roles supporting engagements at Cal State, Contact North, NSHE, and the National University of Singapore. Prior to joining the firm, Yanosky served as deputy director of the EDUCAUSE Center for Applied Research, where he authored ground-breaking research on business continuity, identity management, and other key topics. He was a research director in Gartner's higher education research division, and was assistant professor of American History at Harvard University.

**Toby Sitko** is a Senior Associate of Katz & Associates. Sitko served for 10 years as fellow of the EDUCAUSE Center for Applied Research where she had editorial responsibility for the award-winning ECAR Research Bulletins program. She is the author of more than one dozen research bulletins and principal investigator of the ECAR study on IT value in higher education. A journalist by training, Sitko held progressively greater responsibilities, at Indiana University, the University of Houston, CUNY Graduate School (where she was CIO), and NYU.