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# ArchiTECHture: Rebuilding the Traditional University for the 21st Century

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Claremont McKenna College

**ArchiTECHture: Rebuilding the Traditional University for the 21st Century**

submitted to  
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and  
Dean Nicholas Warner

By Sarah E. Shearer

for  
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“The paradox of education is precisely this – that as one begins to become conscious one begins to examine the society in which he is being educated.” – James A. Baldwin

## Introduction

### Higher Education Under Fire

It is no secret that Higher Education is facing a war on all fronts. Rising tuition costs and drastic cuts in external funding, compounded by dissatisfied employers and federal pressure to increase both efficiency and productivity has resulted in an intense reevaluation of the prevailing pedagogies and structure of the current system.<sup>1</sup> Amidst a record influx of first-time college-age *and* returning adult students,<sup>2</sup> demands for reform are loud and unrelenting. Never before has the thirst for innovation been so strong, and the necessity of *practical* applications so pressing. Many hope e-learning is the antidote to the numerous ills plaguing the today’s educational climate.

Paradigms for the status-quo, traditional brick-and-mortar institutions face not only intense scrutiny, but also increasing competition from a wide array of alternatives. On one hand, structured cyber-degree programs offered by Kaplan, University of Phoenix and their contemporary for-profit colleges (where most, if not all, courses are online) have experienced substantial growth over the last decade. At the other end of the spectrum, the onset of the open education movement in 2008 and the subsequent explosion of MOOCs (Massive Open Online Courses) in 2011 afford even more

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<sup>1</sup> Paul E. Lingenfelter, "The Knowledge Economy: Challenges and Opportunities for American Higher Education," in *Game Changers: Education and Information Technologies*, ed. Diana G. Oblinger (EDUCAUSE, 2012),15-20, PDF.;Bakia, M., Shear, L., Toyama, Y., & Lasseter, A. (2012). *Understanding the Implications of Online Learning for Educational Productivity*. Washington, DC: U.S. Department of Education, Office of Educational Technology.

<sup>22</sup> Grace Kena et al., *The Condition of Education 2014*, report no. NCES 2014-083, Annual Reports (Washington, D.C: GPO, 2014), 58-62, accessed February 17, 2015, [http://nces.ed.gov/programs/coe/indicator\\_cha.asp](http://nces.ed.gov/programs/coe/indicator_cha.asp).

unconventional academic routes.<sup>3</sup> Fueled by extensive public debate, media coverage, and enticing offers to forgo college completely like that recently posed by PayPal co-founder Peter Thiel,<sup>4</sup> students and their families are now seriously questioning the value of attending a conventional school for postsecondary education. Though discussions about the heightened “competitiveness” of the college admission process may at first seem contradictory, it is important to remember that these anecdotes apply to a relatively small portion of all postsecondary institutions in the U.S. Data confirms that *overall*, the lack of confidence in traditional schools has generated a very tangible impact: total national college enrollment actually *dropped* in 2012.<sup>5</sup> At the same time, those enrolled in at least one online course has reached 7.1 million – an all-time high of 33.5% of all post-secondary students. While matriculation has slowed in comparison to the preceding years, the current 6.1% growth rate in online enrollments is still significant.<sup>6</sup> E-learning cannot be disregarded as a momentary fad.

### Heeding the Call

Colleges and universities of all sizes are responding rapidly, not to fall too far behind their peers. Public or private, many have instituted or “are developing more online

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<sup>3</sup> Barnaby Grainger, *INTRODUCTION to MOOCs: Avalanche, Illusion or Augmentation?*, issue brief no. 2221-8378 (Moscow, Russian Federation: United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Information Technologies in Education, 2013), 2, PDF.

<sup>4</sup> Eyder Peralta, "PayPal Co-Founder Hands Out \$100,000 Fellowships To Not Go To College," National Public Radio, last modified May 25, 2011, accessed February 17, 2015, <http://www.npr.org/blogs/thetwo-way/2011/05/25/136646918/paypal-co-founder-hands-out-100-000-fellowships-to-not-go-to-college>.

<sup>5</sup> Beckie Supiano, “College Enrollment Dropped Last Year, Preliminary Data Show”, The Chronicle of Higher Education, October 9, 2012.

<sup>6</sup> I. Elaine Allen and Jeff Seaman, *Grade Change - Tracking Online Education in the United States* (Babson Survey Research Group, 2014), 3, PDF.



courses to both replace and supplement existing courses.”<sup>7</sup> With prestigious bastions like Stanford, Harvard and MIT actively engaged in education innovation, E-learning has in many ways been legitimized as a worthy, or at the very least a *necessary* institutional pursuit. As of 2002, “less than one-half of all higher education institutions reported online education was critical to their long-term strategy. Now, that number is nearly seventy percent.”<sup>8</sup> Furthermore, “not all institutions that profess to believe online education is critical also include online as a component of their strategic plan. There has been a consistent “gap” between those who profess online to be critical and those that have explicitly included an online component in their strategic plan. This year is no different: just over sixty percent of those institutions with at least one full online *program* say online significantly represented in their strategic plan. Among those with only online *courses*, the number is even lower (30.4%).”<sup>9</sup>

Whether all such efforts represent genuine pursuits of progress, or are merely charades to *appear* responsive to the aforementioned pressures and criticism, there are undeniably some common objectives: to remain relevant, sustainable and competitive.

### Narrowing the Scope

Before engaging in further analysis, however, it is essential to differentiate between various types of online courses offered by traditional institutions. Specifically, there is a critical need to differentiate between MOOCs and courses offered *internally* –

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<sup>7</sup> L. Johnson et al., *NMC Horizon Report: 2014 Higher Education Edition* (Austin, TX: The New Media Consortium, 2014), 18, <http://redarchive.nmc.org/publications/2014-horizon-report-higher-ed>.

<sup>8</sup> Elaine Allen and Jeff Seaman, *Changing Course: Ten Years of Tracking Online Education in the United States* (n.p.: Babson Survey Research Group and Quahog Research Group, 2013), 16, accessed February 2, 2015, file:///C:/Users/sshearer15/Downloads/changing-course-ten-years-tracking-online-education-united-states.pdf.

<sup>9</sup> Ibid.

that is to say, to degree-seeking students currently enrolled within the institution. Though the proportion of colleges currently offering or planning to develop MOOCs is minimal (2.6%, 9.4% respectively)<sup>10</sup>, the distinction between these types of courses is necessary to for several reasons.

Though the accessibility impetus is a noble effort to counteract the socioeconomic and geographical limitations that can hamper academic aspirations, MOOCs are susceptible to a number of serious complications by definition; the same “open access” for which it is championed simultaneously undermines attempts to provide quality education.

Beyond the desire to increase educational accessibility, other institutional motives for offering MOOCs are suspect for several reasons too. First and foremost, those elite schools like Stanford, Harvard and MIT initially leading the charge of institution-created MOOCs<sup>11</sup> offered set the standard for subsequent followers in offering “educational gain but no credit.”<sup>12</sup> This necessitates the consideration of why schools are reluctant to award credit, and by extension that true quality of the courses themselves.

Because MOOCs were “created as non-credit courses”<sup>13</sup> – at most rewarding skills “badges,” if anything, to those (few) who complete the course<sup>14</sup> – it is highly

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<sup>10</sup> Ibid., 3.

<sup>11</sup> These school-hosted MOOCs are differentiated from those created by third parties such as Khan Academy, Udacity etc. Some schools do use these mediums as platforms for their own MOOC course delivery, however. The difference is the source of the content, design and development of the course itself.

<sup>12</sup> Scott Jaschik, "MOOCs for Credit," Inside Higher Ed, last modified January 23, 2013, accessed February 18, 2015, <https://www.insidehighered.com/news/2013/01/23/public-universities-move-offer-moocs-credit>.

<sup>13</sup> Jaschik, "MOOCs for Credit," Inside Higher Ed.

<sup>14</sup> Katy Jorda, "Initial Trends in Enrolment and Completion of Massive Open Online Courses," *The International Review of Research in Open and Distance Learning* 15, no. 1 (February 2014): 147.

probable that these offerings were never intended to provide equivalent academic quality to that delivered at the host institution itself. In fact, it's reasonable to assume they were intentionally designed *not* to, as evidenced by the fact that schools who host MOOCs do not award degree-credits for these courses even to their *own* students.<sup>15</sup> This makes logical sense: why would any student pay thousands on tuition to attend college in person if they could receive the same caliber, for at most, a small fee online? Cynics argue students will still be willing to pay for the name that ultimately appears on the diploma; but this is a circular argument. Schools, too, value the reputation and prestige that can only be maintained via selectivity.

But even this rationale can only explain one side of the equation. From the institutional standpoint, the upfront costs of development and implementation of a high-quality online course (as will be discussed later) are no small feat. Online education's ability to bend the overall cost curve in higher education, as advocates and policymakers alike have hope, is still in contention.<sup>16</sup> Adding instructor feedback on coursework and other related teaching duties to facilitate learning would be a financial investment far surpassing any revenue generated from the minimal MOOC- student fees. Furthermore, given that "open access" hypothetically enables anyone with computer access to enroll, the sheer number of students in need of support could render adequate instructor communication and assessment virtually impossible.

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<sup>15</sup> Anoush Margaryan, Manuela Bianco, and Allison Littlejohn, "Instructional quality of Massive Open Online Courses (MOOCs)," *Computers & Education* 80 (January 2015): 77, accessed February 1, 2015, <https://oerknowledgecloud.org/sites/oerknowledgecloud.org/files/1-s2.0-S036013151400178X-main.pdf>; Allen and Seaman, *Grade Change - Tracking*.

<sup>16</sup> David J. Deming et al., *Can Online Learning Bend the Higher Education Cost Curve?*, report no. 20890, Working Paper Series (Cambridge, MA: National Bureau of Economic Research, 2015), accessed February 2, 2015, doi:10.3386/w20890.

A few large unselective public universities, however, have recently expressed interest in awarding credit for MOOCs, but this has not ignited a massive movement as policy makers may have hoped. Even for these few institutions, the process of evaluating acceptable MOOCs from outside parties will take both significant time and resources. This is further complicated by the fact that there are no existing uniform standards for MOOC design quality *or* evaluation, and a vast majority of research to date has focused exclusively on content, with “very little empirical research [devoted to]... their effectiveness for learning.”<sup>17</sup> Furthermore, there has been virtually no “systematic analysis of the quality of instruction in MOOCs”<sup>18</sup> – the little existing research concluding that while some MOOCs may be “well-packaged,” the “overall instructional design quality is low.”<sup>19</sup> Specifically, the majority does not test the achievement of learning outcomes on the (few) students who complete the course. Those that do have been shown to utilize measures that are have not been validated by research, or require that students demonstrate only base-level knowledge rather than higher-level learning or analytic ability.<sup>20</sup> But once again, this is relates to the problem of scaling massive “classes” as well as to the two general institutional incentives: to keep operating budgets low, and to not detract from the number of tuition-paying students that would likely diminish were MOOCs of equal caliber as courses offered *within* a school.

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<sup>17</sup> Margaryan, Bianco, and Littlejohn, "Instructional quality of Massive," 77.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid., 82.

<sup>20</sup> Margaryan, Bianco, and Littlejohn, "Instructional quality of Massive," 77.

Stephanie Corliss and Erin D. Reilly, *Promoting a Higher-Level Learning Experience: Investigating the Capabilities, Pedagogical Role, and Validity of Automated Essay Scoring in MOOCs*, MOOC Research Initiative Final Report (n.p.: n.p., 2014).

The silver-lining may be that credit-recognition - even from less-selective schools - could increase student persistence rates, placing ambitions for a formal degree within reach. Greater completion rates may feed back into the system, in turn motivating some MOOC providers to elevate the quality of design and instruction. However, considering that since the 2013 announcements of a few schools' intent to award credit (and a growth in the number of schools offering a MOOC course to 5%) there has been a drop in the percentage of academic leaders who see MOOCs as sustainable *and* who see them as a useful means for studying online pedagogy.<sup>21</sup> As a result, some have deemed the MOOC explosion past its peak. Whether or not the era of open-access has truly passed, surveys of academics at large show *at best* a significant skepticism toward MOOCs.<sup>22</sup> Employers too hold reluctance, if not distaste, toward MOOCs as a *substitute* for traditional post-secondary delivery.<sup>23</sup> However, many enterprises are utilizing this same medium as means for professional development and skills training for their employees. In fact, the current demographic data finds "the overwhelming majority of users on the largest MOOC platform [Coursera] have at least a Bachelor's degree and a total of 76.7% of users hold an undergraduate or postgraduate degree" suggesting that most users are using it for career development or as a supplemental learning medium, *not* as degree

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<sup>21</sup> I. Elaine Allen and Jeff Seaman, *Grade Change - Tracking Online Education in the United States* (Babson Survey Research Group, 2014), 27-28, PDF.

<sup>22</sup> Carl Straumsheim, "Tempered Expectations," *Inside Higher Ed*, January 2014, [Page #], accessed February 22, 2015, <https://www.insidehighered.com/news/2014/01/15/after-two-years-mooc-mania-enthusiasm-online-education-dips>.

<sup>23</sup> Carolin Hagelskamp, *Not Yet Sold: What Employers and Community College Students Think About Online Education, Taking Stock* (New York City, NY: Public Agenda, 2013), PDF.

replacement.<sup>24</sup> These findings corroborate those documenting that students themselves – the group arguably with the most to gain, at least financially, from greater MOOC acceptance – are also skeptical of MOOCs instructional quality and effectiveness.<sup>25</sup> Perhaps this can explain, at least in part, the dismal retention and completion rates, as well as the “questionable” learning outcomes even for those students who *do* complete a course.<sup>26</sup>

Numerous studies have focused on the motivations of MOOC consumers, but the inherent flaws in survey research combined with abysmal completion rates (and thus few participant data points) have generated contradictory results creating an inconclusive picture.<sup>27</sup> However, it is not illogical that general disinclination toward MOOCs certainly reduces the likelihood that external motivation drives completion, as some analyses suggest.<sup>28</sup> The only predictor of MOOC persistence researchers seem to agree upon has been the level of behavior engagement. Put more succinctly, the frequency in which a participant actually logs on, watches videos etc. is correlated with the likelihood of completion.<sup>29</sup> But this seems logical and unsurprising.

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<sup>24</sup> Barnaby Grainger, *INTRODUCTION to MOOCs: Avalanche, Illusion or Augmentation?*, issue brief no. 2221-8378 (Moscow, Russian Federation: United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Information Technologies in Education, 2013),4, PDF.

<sup>25</sup> Hagelskamp, *Not Yet Sold: What.*

<sup>26</sup> Laura Perna et al., *The Life Cycle of a Million MOOC Users*, MOOC Research Initiative Conference (University of Pennsylvania, 2013), PDF.

<sup>27</sup> Justin Reich, "MOOC Completion and Retention in the Context of Student Intent," *Educause Review*, December 8, 2014, accessed April 7, 2015, <http://www.educause.edu/ero/article/mooc-completion-and-retention-context-student-intent>.<http://www.educause.edu/ero/article/mooc-completion-and-retention-context-student-intent>.

<sup>28</sup> Bruno Poellhuber et al., *The Relationship between the Motivational Profiles, Engagement Profiles and Persistence of MOOC Participants*, MOOC Research Initiative Final Report (n.p.: n.p., 2014).

<sup>29</sup> Poellhuber et al., *The Relationship between the Motivational*.

It would seem that at least at the present moment, institutions with existing MOOCs have little incentive to elevate the quality.<sup>30</sup> Those who don't may only enter the fray in the future as an additional source of revenue.<sup>31</sup> However, given the trends previously discussed, the general instability of the MOOC arena has clearly not hampered online development in higher education overall. Institutions have instead focused on curating *exclusive* e-learning offerings specifically for their degree-seeking student body. This paper will suspend cynical questions of motive and will assume that at least *some* institutions are seeking to utilize technology to effectively elevate the quality or efficiency of its educational agenda – if not both.

It is reasonable to infer that the incentives behind these endeavors are different from those motivating MOOC development and are driven by an inherently different definition of “success.” Once again, institutions and their degree-seeking students share similar aspirations for academic recognition, and internally-oriented online development no doubt reflects these goals. Institutions seek to preserve if not elevate their reputation, and the rigor and sustainability of the academic offerings *must* be translated successfully to do so. From another angle, these students are more likely than their MOOC counterparts to complete the course, but more importantly, are motivated to successfully *demonstrate* their learning. It is both dangerous and irrelevant to proclaim that these ‘traditional’ students are more motivated to *learn* than those who enroll in MOOCs.

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<sup>30</sup> "The world is going to university: More and more money is being spent on higher education. Too little is known about whether it is worth it," *The Economist*, March 28, 2015, accessed March 28, 2015, <http://www.economist.com/news/leaders/21647285-more-and-more-money-being-spent-higher-education-too-little-known-about-whether-it?zid=316&ah=2f6fb672faf113fdd3b11cd1b1bf8a77>.

<sup>31</sup> Carl Straumsheim, "Strategies for the Small," *Inside Higher Ed*, last modified February 19, 2014, <https://www.insidehighered.com/news/2014/02/19/small-colleges-online-education-strategies-are-varied-their-mission-statements>.

Rather, differentiating the incentive to *prove* mastery of the material is logically derived from the ‘contract’ between such student and the school. Students adequately meet predetermined standards and in exchange, are rewarded with a formal degree – the socially accepted indication of academic achievement. From a more pragmatic perspective, students and those funding their education at a specific institution indisputably have more to lose (and to gain, given the widening earnings potential between degree and no-degree holders) financially than MOOC-enrollees. Consequently, it is reasonable to assume these “traditional” students are more incentivized to produce *visible* learning outcomes.

For these reasons, it is both justified and pragmatic to examine e-learning projects developed exclusively for an institution’s student body. Limiting the scope of inquiry in this way by no means diminishes the difficulty of developing and orchestrating e-learning agendas. Over the course of this paper, it will become abundantly clear that catering solely to degree-seeking students in fact results in a *greater* degree of complexity.

#### The E-State of the Union: Current Online offerings at Brick-and-Mortar Institutions

Some schools have been offering online courses of some sort for years, while others are just beginning to test the waters. For example, 70.6 % of public institutions, most of which had at least some online courses a decade ago, now have complete online programs. Adoption of e-learning among private non-profit schools, while slower to take off, have seen the most overall growth in e-learning since 2002; nearly 80% now offer some online coursework, and the number with full online programs has doubled from 22.1% in 2002 to 48.4% in 2012. It is not unreasonable that all these figures have



continued to grow in the three years since, though the greatest source of total online enrollments has not been an influx of new schools with online offerings, but rather “from the transition of institutions with only a few online courses moving to offer fully online programs, and from institutions with online programs expanding their offerings.”<sup>32</sup>

A college’ *existing* offerings, if any, will logically impact how it will approach a new e-learning project. But this logic must also extend to include the “state of the union” of those schools viewed as. As previously discussed, the market for students is competitive and, depending of course on the specific individuals’ needs or objectives, lagging behind similar institutions in the number or scope of online offerings could be problematic, and not only in the distant future, but even the next school year given the rapid growth of technology, and the continued number of students electing to take at least some coursework online.

Underscoring these market pressures, however, are a number of other factors all institutions must at minimum *consider*, regardless of where they currently are along the online trajectory. The weight given to each element and the immediacy with which it is acted upon will of course, vary by institution.<sup>33</sup> Before further examination of the consideration pertinent to institutional-level development, however, it is critical to first acknowledge a problematic phenomenon obstructing meaningful educational reform at large.

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<sup>32</sup> Allen and Seaman, *Changing Course: Ten Years*, 21.

<sup>33</sup> *Ibid.*, 4.

## The Research-to Realization Predicament

Even in narrowing the scope to focus on the online courses *within* traditional institutions, present research on the effectiveness of specific course designs or delivery methods are inconclusive. Not only have experimental case studies been limited to relatively small samples of students or courses, the tools of measurement are inconsistent. Some have assessed the “success” of the program based only on student and/or faculty satisfaction surveys. For those studies that measure actual learning outcomes, a substantial number only compare these figures to these same participants’ understanding *prior* to the course, not necessarily to the outcomes of students in the corresponding face-to-face format of the course. These complications are further compounded by rapidly changing technology capabilities for online education and the vast array of third party platforms (Blackboard, Moodle, Canvas etc.) available, should a school choose to outsource design, content or both. Research conducted over the course of a semester or entire academic year, while undoubtedly preferable to short-term trials in terms of validity, run the risk of being irrelevant come publication, regardless of the conclusiveness of the results.<sup>34</sup> As a result, making definitive claims - good or bad - about a specific design is in many cases premature. Furthermore, if generalized without regard to school-specific variables, any such conclusion may in fact impede an institution’s ability to achieve its e-learning objective, whatever that may be.

While this paints a grim picture of experimentation, design research and curriculum transformation are worthwhile endeavors. The quest for high-quality and

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<sup>34</sup> Barbara Means et al., "The Effectiveness of Online and Blended Learning: A Meta-Analysis of the Empirical Literature," *Teachers College Board* 115 (March 2013): 38, PDF.

effective online teaching and learning is not only honorable, but is a field that is growing exponentially. Furthermore, the advancement of learning analytics offers a bright outlook for the future, as new algorithms and big data allow both researchers and practitioners alike to better understand what works, and to respond to students needs *in real-time* to better facilitate authentic learning.<sup>35</sup> Harnessing these new mechanisms effectively, however, necessitates a reevaluation of the dominating model for research and implementation.

More specifically, there is a pressing need to “conceptualize a new relationship between research and practice that is mutually transformative.”<sup>36</sup>The vast majority of education initiatives to date have been characterized by two procedural precedents, which in many ways delay if not deter the realization of meaningful reform. The first involves a tradition of the “division of labor between those who design innovations and those charged with implementing them.”<sup>37</sup> Consequently, research on effective *design* is kept distinctly separate from that focused on implementation. Highlighting the problematic nature of this division is not intended to devalue the merit of each course of study and its respective contributions, however; “The potential utility of design research...derives from its commitment to developing theory that guides design decisions and practical tools

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<sup>35</sup> Andrianes Pinantoan, "Learning Analytics: Leveraging Education Data [Infographic]," *informED* (blog), accessed February 2, 2015, <http://www.opencolleges.edu.au/informed/learning-analytics-infographic/>. Kristen Hicks, "Improving Student Experience with Big Data: A Look at Civitas Learning [Infographic]," edcetera, last modified April 19, 2013, accessed February 2, 2015, [http://Improving Student Experience with Big Data: A Look at Civitas Learning \[Infographic\]](http://Improving Student Experience with Big Data: A Look at Civitas Learning [Infographic]).

<sup>36</sup> Barry J. Fishman et al., "Design-Based Implementation Research: An Emerging Model for Transforming the Relationship of Research and Practice," *Yearbook of the National Society for the Study of Education* 112, no. 2 (2013): 138 PDF.

<sup>37</sup> *Ibid.*, 144.

that can be used to support local innovation and solve practical problem.”<sup>38</sup> By contrast, “Implementation research is the systematic study of the implementation of innovations...it encompasses...variation in implementation, as well as analyses of the conditions under which programs can be implemented effectively” and is “often conducted within larger outcome studies.”<sup>39</sup> More than prescriptive remedies, the most important contribution made by implementation research, as method of inquiry, has arguably been to confirm the “inevitability of local adaptation and the need to support local actors’ sense-making in shaping and implementation of innovations”<sup>40</sup> – to better the odds that the “potential” service of design-research becomes actualized.

It is important to recognize the deep roots of the detachment between research and implementation. This isolation is a byproduct of Taylorism and its considerable influence on organization and managerial practice that, while beneficial for productivity, can simultaneously inhibit innovation. As this consequence extends to educational reform, the result is “[m]any programs that work on a small scale when well-supported by researchers fail when they are tested in effectiveness studies, in part because educators face many challenges in implementing them well.”<sup>41</sup>

This quote hints at the second norm preventing successful reform, one that is largely a product of the separation between research and implementation projects. In what has been described as the “translation metaphor,” this traditional approach is problematic in that it assumes a fixed sequential order, in which research always precedes

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<sup>38</sup> Ibid., 138.

<sup>39</sup> Ibid., 141.

<sup>40</sup> Ibid.

<sup>41</sup> Ibid., 138.

implementation.<sup>42</sup> This pattern augments the problem of separating research from implementation by adding on wasted time and resources when a design or method collapses upon implementation, sending researchers back to the drawing board, practitioners to wait idly by until another empirically supported model is found and relayed.

Reliance on the translational model is unsurprising given the structural mechanisms in place intended to facilitate innovation. The primary culprits are the “evidence standards and the associated sequencing of types of education research promoted by the Institute of Education Sciences (IES)”– a subsidiary of the U. S Department of Education, which have become “deeply ingrained in federal policy for research funding.”<sup>43</sup> Unfortunately, as evidenced by the inconclusiveness of most research discussed earlier, the complexities of reality are at odds with this “basic assumption that there are clearly defined education programs or interventions that either ‘work’ or ‘don’t work.’”<sup>44</sup> The dominating precedent has clung to the translation model, despite its flaws; “Policy makers have for decades focused significant attention on addressing breakdowns in the translation process as a means to close the gap between research and practice,”<sup>45</sup> rather than proposing a new framework. For example, the Institute of Education Sciences created by the Education Sciences Act of 2002, developed grants devoted to support “two basic types of translation activities: designing developing

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<sup>42</sup> William R. Penuel et al., "Conceptualizing Research-Practice Partnerships as Joint Work at Boundaries," *Journal of Education for Students Placed at Risk*, n.s.,3, PEF.

<sup>43</sup> Barbara Means and Christopher J. Harris, "Towards an Evidence Framework for DBIR," *Yearbook of the National Society for the Study of Education* 112, no. 2 (2013): 2, PDF.

<sup>44</sup> Ibid.

<sup>45</sup> Penuel et al., "Conceptualizing Research-Practice Partnerships as Joint," 3.

interventions grounded in basic research and testing interventions under real-world conditions in a wide variety of settings.”<sup>46</sup> This is a precise example of the ways in which policy has not only *upheld* the sequencing of the translational model, but also enabled the separation of controlled research and implementation. Ironically, a recent U.S. Department of Education report on educational productivity and online learning noted that “rigorously researched models are lacking” that policymakers have in many ways facilitated, but also bemoaned the authoring committee’s reliance this available literature as the only means to draw conclusions.<sup>47</sup>

There is clearly a need to acknowledge variables before supposedly uniform solutions are haphazardly applied, regardless of context. Recognizing these variables can then be used better predict and plan for potential obstacles. This requires a new method/framework for innovation in education that satisfies the need for actualized not theoretical change. Institutions and policy makers alike will benefit from abandoning a flawed research tradition.

### Design-Based Implementation Research

The aptly named Design-Based Implementation Research paradigm (DBIR) was developed by education researchers in response to the inefficiencies of the translation standard of practice.<sup>48</sup> Evolved from the “design experiments” presented by Brown and

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<sup>46</sup> Ibid.

<sup>47</sup> Bakia, M., Shear, L., Toyama, Y., & Lassetter, A. (2012). *Understanding the Implications of Online Learning for Educational Productivity*. Washington, DC: U.S. Department of Education, Office of Educational Technology; vii.

<sup>48</sup> Barry Fishman, Britte Chang, and William Penuel, "Design-Based Implementation Research," The Center for Innovative Research in Cyberlearning (CIRCL), accessed February 23, 2015, <http://circlcenter.org/dbir/>.

Collins in 1992,<sup>49</sup> this framework endorses a joint partnership between researchers and those tasked with implementing innovations. DBIR not only necessarily combines theories of learning and motivation with those of organizational structure and productivity,<sup>50</sup> but recognizes that “each new environment ... has distinctive characteristics, constraints, and priorities” and thus “does not specify a particular method or analytic approach, recognizing that a range of different methods is appropriate in different circumstances and in different phases of the innovation research and development lifecycle.”<sup>51</sup> The following are the four key principles guiding DBIR, taken from the 2013 Yearbook of the National Society for the Study of Education edition dedicated to the introduction and discussion of this emerging framework:

- A focus on persistent problems of practice from multiple stakeholders’ perspectives;
- A commitment to iterative, collaborative design;
- A concern with developing theory and knowledge related to both classroom learning and implementation through systematic inquiry;
- A concern with developing capacity for sustaining change in systems.<sup>52</sup>

These principles not only address the problems previously discussed surrounding the precedents of innovation research and implementation, but also expands to specifically emphasize the importance of sustainability. While sustainability is undoubtedly an ultimate objective in most reform projects, this is an assumption that is

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<sup>49</sup> Feng Wang and Michael J. Hannafin, "Design-Based Research and Technology-Enhanced Learning Environments," *Educational Technology Research and Development* 53, no. 4 (2005): 5, <http://www.jstor.org/stable/30221206>.

<sup>50</sup> Jennifer Lin Russell et al., "Theories and Research Methodologies for Design-Based Implementation Research: Examples from Four Cases," *Yearbook of the National Society for the Study of Education* 112, no. 2 (2013):158, PDF.

<sup>51</sup> Fishman, Chang, and Penuel, "Design-Based Implementation Research," The Center for Innovative Research in Cyberlearning (CIRCL).

<sup>52</sup> Fishman et al., "Design-Based Implementation Research: An Emerging," 142-143.

rarely made explicit, least of all during the initial phases of inquiry and experimentation. Much in keeping with the sequential nature of the translational paradigm, sustainability goals are usually tacked *after* a workable innovation is produced. In DBIR, the sustainability component is included from the onset, as a critical objective guiding development. This is of extreme importance to education innovation, given the numerous problems higher education *currently* faces and those it is likely to face in the future given increasing numbers of students.

Despite the deeply entrenched/routinized research and funding practices outlined earlier, there is increasing support for new collaborative approaches toward education reform like that advocated by DBIR. For one, the National Research Council's *Strategic Education Research Partnership* report "laid out a vision for new infrastructure to support more durable partnerships between researchers and practitioners" and "called for the funding of an intermediary organization" to assist in facilitating smooth and productive relationships.<sup>53</sup> Even policy makers may be in the process of reassessing entrenched research-funding practices, and realizing the need for a more comprehensive course of action. That same document in which past models were deemed "lacking," simultaneously declares that "Studies designed to inform educational decisions should follow rigorous methodologies that account for a full range of costs, describe key implementation characteristics and use valid estimates of student learning,"<sup>54</sup> suggesting an important shift may be on the horizon.

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<sup>53</sup> Fishman et al., "Design-Based Implementation Research: An Emerging," 141-142.

<sup>54</sup> Bakia et al., "Understanding the Implications," vii.



In addition, numerous case studies have begun across all educational levels and, based on DBIR's emphasis on sustainability, include plans to adapt and evolve in response to continued feedback and evaluation.

The momentum for innovation in higher education combined with growing acceptance of DBIR validates the use of this framework as a means to explore institutional endeavors. Grounded in the DBIR principles and informed by case studies and ongoing investigation, this paper will explore the complex factors institutions must address throughout the process of developing, implementing and evaluating an e-learning project.

“An examination of online competency-based education unveils the tectonic shifts to come in higher education. Over time, the industry-validated experiences that emerge from the strong partnerships between online competency-based providers and employers will ultimately have the power to override the importance of college rankings and accreditation.”

### Chapter 1: Starting at the Top

It may be too early to make such radical predictions about the total demise of the traditional college, as that above made by authors Michelle R. Weise and Clayton M. Christensen in *Hire Education: Mastery, Modularization, and the Workforce Revolution*, it no less reflects the pressure and urgency felt by schools and their leaders. Whether to defend the institutional structure from attack and preserve its legitimacy in the future, or to aggressively pursue new educational methods and pedagogies, if not both, administrators *must* respond to such suppositions. Alternatives have a great deal to prove with respect to not only learning outcomes, but also in their power to influence social mobility if they are to truly eradicate traditional institutions, and the benefits that a majority of Americans *still* associate with a “college education”<sup>55</sup> - which have been consistently validated by data<sup>56</sup> - despite the current challenges. But as has been proven throughout history, radio silence often provokes, rather than stifles, discontent; so even if notions about complete upheaval in higher education are, in fact, overstated, academic leaders’ inaction may at best come across as sheer ignorance, and at worst, denial of modernity *and* the plight of today’s student. An explicit denial or outright resistance to

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<sup>55</sup> *The 2013 Lumina Study of the American Public’s Opinion on Higher Education and U.S. Business Leaders Poll on Higher Education: What America Needs to Know about Higher Education Redesign* (Gallup Inc., 2014), 7, PDF.

<sup>56</sup> David Leonhardt, "Is College Worth It? Clearly Yes, New Data Says.," *The New York Times* (New York, NY), May 27, 2014, [Page #], accessed April 7, 2015, <http://Is College Worth It? Clearly, New Data Say.>

change will yield only the latter. Adapting to the times need not mean concession to these predictions: innovation is a critical way to adapt without surrender. For many, online education is considered a plausible means to do so, but to fully “understand the potential for educational productivity offered by online learning opportunities, it is similarly necessary to look at the pedagogical and practical affordances through which productivity gains might be realized.”<sup>57</sup>

#### Deliberations at the Helm: Institutional Leadership’s Role in E-Learning Development

Implementing an innovation of *any* kind can be a difficult process; one with far-reaching implications that simultaneously challenges traditional philosophies and practices is even more wrought with complexity. Such is the case for higher education institutions, which are called upon to respond “to both internal and external changes influenced by technological advances.” *The Economist*’s Emma Duncan notes the irony of universities’ resistance, given that the same “institutions have also powered the digital revolution that has improved life in every corner of the planet.”<sup>58</sup> Essentially, progress that has now put intense pressure on traditional institutions is, in part, a cruel by-product of their own excellence.

As technology continues to increasingly permeate academic life at the elementary and secondary levels, incoming generations of college students will be accustomed to using digital mediums for learning. Luckily, the accessibility of physical devices as well as various digital resources devoted to academia has grown in tandem, both for the

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<sup>57</sup> Bakia et al. “Understanding the Implications.”;15.

<sup>58</sup> Emma Duncan, “Excellence v. Quality,” *The Economist*, March 28, 2015, accessed March 28, 2015, <http://www.economist.com/news/special-report/21646985-american-model-higher-education-spreading-it-good-producing-excellence>.

individual student and for the institution at large.<sup>59</sup> “However, the procurement of leading-edge technology is merely the beginning of a journey toward the delivery of online education. Mere access to technology is insufficient in ensuring project success. Faculty and students require appropriate administrative support before, during, and after the implementation of new technology.”<sup>60</sup> The DBIR framework necessitates that the process of implementation be studied as it *actually* unfolds in reality, a far greater source of value than mere conjecture about how it *should* look. Thus, analysis of a comprehensive e-learning project must begin from the start, that is, where the process is set in motion. Though the idea or inspiration for online learning may originate elsewhere, it can only get its legs from mechanisms within organizational structure of the institution. Abundant research supports Abel’s conclusion that “the involvement of key leaders in prioritizing when to focus on online learning development was critical and highly correlated with perceived success.”<sup>61</sup>

#### Presidents: Symbolic and Pragmatic Project Allies

Institutions’ presidents are a particularly crucial. Not only do these institutional beacons represent their respective institutions to the external academic community and the public but also they possess both real and symbolic power within the school itself. In the face of the many aforementioned attacks on higher education, the majority of university presidents are surprisingly optimistic about the future of American higher

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<sup>59</sup> Amanda C. Barefield and John D. Meyer, "Leadership's Role in Support of Online Academic Programs: Implementing an Administrative Support Matrix," *Perspectives in Health Information Management / AHIMA, American Health Information Management Association* 10 (Winter 2013): 1, PDF.

<sup>60</sup> Ibid.

<sup>61</sup> Abel R. “Implementing Best Practices in Online Learning: A Recent Study Reveals Common Denominators for Success in Internet-supported Learning.” *Educause Quarterly*. 2005;76, quoted in Barefield and Meyer, "Leadership's Role in Support," 2.

education according to a recent report by Maguire Associates. However nearly two thirds of those surveyed believe “the system will look very different ten years from now than it does today.”<sup>62</sup>

But this is not to suggest these leaders are resistant to change. Despite the common conception that traditional institutions (and those who run them) are stagnant and stubborn entities, most college leaders welcome change - and substantial change at that. “When given the options of evolutionary change or disruptive change, two-thirds of the presidents favor for massive or moderate disruption,”<sup>63</sup> though they do have a clear and overwhelming preference for “hybrid courses that blend face-to-face learning with online learning, and adaptive learning that uses technology to adjust lessons based on the needs of the student.”<sup>64</sup> This is true for presidents of both public and private institutions.

By contrast, the majority remains skeptical of open courses and MOOCs’ ability to positively impact higher education. Interestingly, given the demographics of the survey respondents, this majority must include many presidents of *public* schools – those most likely to need to resort to the use of open-courses in the future, if necessary. Public schools by definition are tied to the political system and state funding, and expected to educate a massive number of students, and at a lower cost, compared to their private counterparts.

The poor evaluation of MOOCs not only explains the tendency not to award credit to students who complete these courses – even if the institution itself is the “host.”

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<sup>62</sup> Maguire Associates, Inc., *The Innovative University: What College Presidents Think About Change in American Higher Education*, ed. Jeffrey J. Selingo (The Chronicle of Higher Education, 2014), 8, PDF.

<sup>63</sup> *Ibid.*, 10.

<sup>64</sup> *Ibid.*, 18.

As previously discussed, however, this could be a circular argument: belief in the inferiority of open-courses could prevent even those institutions offering them to external enrollees. The more cynical argument, again, suggests a chicken-or-the-egg logic: are these courses inherently inferior thus leading to presidents' (and others) skepticism? Or, are prevailing biases within institutional leadership dictating the low quality of MOOCs, and, as a result, their lack of acceptance as a valid method of instruction? These biases might, theoretically, apply not only to pedagogies of teaching; in fact, given the presidents' aforementioned openness to innovation and new methods, strict adherence to traditional pedagogy may *not* be the dominating bias. The various market influences brought by globalization coupled with the increasing number of alternatives to a college degree, warrants consideration of an additional premise. Perhaps at least *some* of the pessimism surrounding open-courses reflects a bias about *who* awards academic distinction, and less about *how* it is achieved. More than any other single actor, presidents represent a long tradition of institutions as the "gatekeepers" of the academic community, and by extension the well-documented benefits a degree procures over lifetime. While their commitment to improving education through innovation may be pure, embracing new methods may also be to Presidents' advantage if institutions are to remain the primary portal for academic and economic success. Likewise, though the preference for hybrid models may very well be genuinely tied to quality, it may also be strategic. Diverting too many students and or too much coursework to the web could undercut the necessity of the structure of the institution itself.

Suggestions of this nature and the cynical view of the traditional institution are widely touted by the most liberal of education reformers, or those who have market investment in some alternative-to-degree. Regardless of the merit of these claims, institutions *are* adapting for whatever the reason. Whether to compete with the educational marketplace at large or more directly with their brick-and-mortar peers, schools will at some point need to pursue *quality* in their online programs. To begin this quest immediately, rather than wait until e-learning is virtually a standard offering among all institutions, could be advantageous in the long run. Overall, presidents recognize the direction higher education is headed. Motivated by pure devotion to educational progress, the sustainability of the college-model, or by their own legacy as the instigator of innovation for the institution, presidents have a vested interest in the successful evolution of an e-learning program. They wield both real and symbolic influence, and as leaders are in a prime position to ensure an e-learning project is launched with fervor.

#### Leadership At Large: The Board

Presidents possess incredible clout derived from the nature of their post and a high degree of individual visibility, both within the institutional hierarchy and to the outside world. However, they are not the only source of institutional license. Any project, even those with the full weight of the Presidents' activism, is likely to fail (if ever get off the ground...) without the support of other key institutional leaders. At most institutions, a governing Board of Directors consisting of at least the President, Vice President, Chief Academic Officer and Trustees supervise the operation and performance of the institution at large. Given the governing board's oversight responsibilities, it must interact to some

extent, with all subsets of the institution. Those at the helm, however, are entrusted with the greatest organizational jurisdiction and ultimately have the power to green-light any e-learning project. The motivations<sup>65</sup> for embarking on this type of endeavor may or may not arise from the Board itself, but regardless of its origins must be authorized by this body, assuming, of course that the proposed project constitutes a true institutional pursuit either due to the degree it deviates from traditional practice and/or the scope of anticipated impact.

Not only must the Board of Directors authorize most (if not all) institutional projects – especially those as substantial as an e-learning endeavor – but it is also additionally emboldened with the power of the purse. The financing of an online project, as will be expanded upon later, is often correlated with the outcome of the project, predictive of its future success or failure. Inadequate funds or poor allocation for the initial development and rollout are only some of the monetary missteps that can hinder such projects; securing additional funds and/or appropriately earmarking money to support the continual evaluation and adjustment of the program are critical to a sustainable e-learning project. The Board of Directors thus have a dual responsibility in regards to their fiscal oversight for online learning project: (1) to raise or secure the funds from outside sources (if necessary), and (2) efficiently plan and apportion these funds for success in the long-term. Awareness of this second facet necessarily plays into the first, dictating how the Board should approach various stakeholders: it must be made clear in no-uncertain terms that an e-learning project, regardless of design and scope specifics, is

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<sup>65</sup> The motivations/ catalyst for pursuing an online learning project will be discussed in Chapter 2, which details the preliminary considerations administrative leaders face.



a financial investment with “returns” that may not be monetary (i.e. learning outcomes, decreased time to graduation etc. depending on the intended purpose and ultimate result, unique to the specific project and school). Furthermore, the Board must make abundantly clear that any type of return must be measured in light of the intention to develop long-term courses or programs: the payoffs that both the Board and the shareholder(s) obviously hope for, will likely be slow to materialize, or at least in an explicitly visible or measurable way. Institutional leaders themselves must not misconstrue a *lack* of recognizable *positive* outcomes as necessarily being negative returns - of which there are admittedly apt to be some, especially for a poorly designed or implemented project. The two, however, are not synonymous.

### The Model Conundrum

Simply sanctioning an online course or program, leaving of the development and implementation to others, however, is not enough. In his testimony of the project development at Trinity Western University, Philip Laird summarizes the research he and his colleagues conducted on the experiences of other traditional institutions. Their analysis revealed “four categories of models of e-Learning integration” existing in both public and private universities.<sup>66</sup> In keeping with DBIR’s emphasis on situational context and pragmatism, the following paradigms are *not* prescriptive hypotheticals; despite the misleading use of the word “model,” the following configurations represent the ways implementation has materialized in *reality* for a vast number of schools and thus may serve as a more legitimate reference source for administrators seeking to pursue an online

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<sup>66</sup> Philip G. Laird, "Integrated Solutions to E-Learning Implementation: Models, Structures and Practices at Trinity Western University," *Online Journal of Distance Learning Administration* 7, no. 3 (Fall 2004): accessed March 8, 2015, <http://www.westga.edu/~distance/ojdla/fall73/laird73.html>.

project. Furthermore, a comprehensive review of the literature on online learning implementation, and additional case study analysis finds these models to accurately capture the different strategies and trajectories used to date. Laird defines the following four models:

- **“independence or distance education” model:** the online or distributed learning unit operates on the fringes of the academic enterprise.
- **“lone wolf” model:** individual faculty members are given exclusive control over the online creation and distribution of their educational materials.
- **“silo model”:** each department/school/faculty is given exclusive control over the design, development, and delivery of online learning.
- **“integration model”:** online learning infrastructure is placed at the core of the academic enterprise.

The first two models, by definition, relegate the development and execution of the project to a select few individuals, and are - for better or worse- more likely *not* subject to the various regulations of a more comprehensive undertaking. The limited scopes of the “independence or distance education” model and “lone wolf” model do not represent a true *institutional* enterprise, and though perhaps with advantages from specialized management, are nonetheless irrelevant for the focus of this paper. Thus we are left to consider the latter two models.

In expanding on his definition of the “silo model,” Laird highlights a relevant drawback: “In this model, infrastructure costs become redundant and standardization of

online educational materials is poorly controlled.”<sup>67</sup> While this is no doubt a potential flaw, Laird treats it as an *inevitable* consequence of the silo model. This is prone to falling into the unfortunate tendency to disregard (or in this case, condemn) a specific approach, as referenced in the discussion of research limitations. The potential success or “fit” of this model is related to an individual institutions’ unique circumstances as well as the intended scope of the initial project; while it may produce unnecessary and “redundant” costs and poor quality for those schools in Laird’s analysis, it should by no means be presumed to yield the same problems for *all* institutions.

A number of variables, or combination there of, may cause a school to purposefully select the silo model: the size of college, the proposed scope or size of project (be it number/variety of courses, total students served etc.), degree of departmental freedom, means of assessment for the course/program, selected revenue strategy etc. These variables, which will be expanded upon later, are all elements warranting administrators’ consideration that may justify the use of the silo model.

However, it is likely that the silo model would only be sufficient for the initial e-learning project, and likely one with a limited scope. Laird’s “observations” about the redundancy and inefficiency of the silo model are, in some cases, a *result* of an expansion upon the initial project. While no doubt some schools’ use of the silo model was problematic to begin with and these defects as unavoidable as Laird’s language suggests, the silo model may have served the organizational variables and needs of other schools sufficiently for the preliminary project. However, if the size and intricacies of online

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<sup>67</sup> Laird, "Integrated Solutions to E-Learning,".

learning progress within an institution, these shortcomings are apt to come to fruition. Considering the expected trajectory of e-learning as a critical mechanism in the future for the vast majority of higher education, the silo model would likely only be viable for a very short term.

Thus, while unfair to discount the silo model on merit, it may be more realistic - and likely cheaper over the long term - to rule it out at the forefront if, while fitting for the short term, this model is nonetheless inconsistent with the implications of future online growth. DBIR inquiry and extensive literature on both organizational change and e-learning *in particular*, overwhelmingly suggest administrators sacrifice ideal “fit” for the current institutional state, in favor of a forward-facing strategy. An eye toward the future of a sustainable program that can withstand growth and development requires that administrators take on an active role in the project. The tremendous growth of online education thus far has *not* resulted solely - or even in large part - from internal motivations, nor will it likely in the future. The various external forces, be they market, public, governmental etc., continue to compel institutions to innovate for reasons beyond their control. In other words, administrators’ - even faculties’ personal dispositions toward online learning may be all but irrelevant in the future, and yet their roles are increasingly important to the endurance of the institution.

Thus, the “integration model” should not be seen as the “default” as the only the last remaining option by process of elimination. By definition, this model necessitates participation at *all* levels of the institution, and most aligned with the need for sustainability, and active administrative-led mobilization. The “integration model”

embraces the daunting complexities of a full-scale endeavor, but does so with the commendable goal of searching and perfecting an online program that is not only able to meet the institutional needs - be it academic, financial etc. - but is able to efficiently withstand and adapt the expected trajectory of e-learning. Thus, regardless of the specific decisions made along the journey (be it the subject, design, or scope of the course or program) which will and more importantly *should* be made in deference to the specifics of the individual school, adopting the integration model - or embodying its' commitment to an active administrative role is a pragmatically sound decision.

To quickly conclude the experience at Trinity Western: Laird recognized the necessity of adopting the model most conducive to this ambitious goal, and selected the “integration model” to guide the development and implementation from of the e-learning project from the forefront. Combining his own experience (post-facto) with the conclusions drawn by past institutional experiences, Laird reaffirms the necessity and benefits of the integrated model, writing that the “placement of the online learning enterprise at the core of academic administrative processes enables maximum quality and standardization of quality with minimal redundancy and cost. When the unit responsible for online learning is also given the latitude to research and experiment with new and innovative distribution models, the stage is set for a productive and rapidly evolving venture into online learning.”<sup>68</sup>

The pragmatic benefits of a comprehensive approach are not lost on those directly involved and impacted by online innovations: The APLU-Sloan National Commission on

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<sup>68</sup> Laird, "Integrated Solutions to E-Learning,".

Online Learning Benchmarking Study, for example, emphasized that all types of institutional participants interviewed -administrators, faculty *and* students- “commented on the need, perhaps even the imperative, for institutions to engage in broad, inclusive planning processes, given the amount of time and money that must be invested to develop and sustain these programs”<sup>69</sup> and the belief that “some form of centralization was a key factor in that success.”<sup>70</sup>

Once again, this data was gathered from public colleges and universities, but that is not to suggest that private institutions should not heed this advice. These respondents, however, arguably have more experience with the real complexities of implementation, as personal attitude toward e-learning may have been all but irrelevant given the enrollment and budgetary constraints that have pressured if not forced public schools to adopt new methods of instruction. The integration model, it would appear, goes beyond sheer theory or recommendation, and the academic world is, luckily, in the process of catching on.

Exaggerated or not, claims that technology has the power to abolish traditional institutions place in higher education have been posited - and publicly: leaders would be wise to accept, if not embrace the changing tide before it is too late. “Too late” is unlikely to be the altogether dissolution of traditional colleges for even those most critical of these gatekeepers concede that “the vast majority of students will go through traditional institutions for the foreseeable future, and the inefficiencies in those institutions mean

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<sup>69</sup> McCarthy and Samors, *Volume 1: A Resource*,14.

<sup>70</sup> *Ibid.*, 21.

that even modest reforms should improve matters.”<sup>71</sup> But the longevity of the institution that *resisted* while others acclimated and acted will be at risk; that institution will be crippled if not crumble. The role that leadership - both Presidents and the Governing Board - must play, as only they can, in securing institutional durability cannot be overstated.

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<sup>71</sup> Andrew P. Kelley and Frederick M. Hess, *Beyond Retrofitting: Innovation in Higher Education*, Hudson Institute Initiative on Future Innovation (Hudson Institute, 2013), 9, PDF.

“An investment in knowledge pays the best interest.” – Benjamin Franklin

## Chapter 2: Defining the Purpose, Goals and Scope

Successful leaders are attuned to the overall temperament of the institution, not only by gauging the openness of faculty, but that of the student body, but also the board. While resistance or support from just one of these cohorts may not be sufficient to completely table or instigate an online initiative, the general sentiment and cohesiveness of these bodies is likely to impact the scale of the proposed project. It will also help in anticipating potential obstacles, bypassing them completely when able, or reacting efficiently and purposefully should they occur. Online Implementation researcher Suzanne Levy has documented six overarching considerations institutional and administrative leaders use to guide the early discussions and planning of these projects. Given that these elements have been legitimized by numerous subsequent case studies of a diverse range of institutions, including the following factors before a comprehensive analysis of the preliminary aspects to an e-learning project is helpful for providing a general framework of common considerations.

1. Vision and Plans
2. Curriculum
3. Staff Training and Support
4. Student Services
5. Student Training and Support
6. Copyright and Intellectual Property

These elements reflect “big picture” as well as more “technical” considerations that, though they may not be decided in the exploratory phase, leaders must always be conscious of to some extent. Rather than addressing each in a sequential or fixed order, DBIR methodology, and the complexity of reality itself, suggest that these be used



liberally, as guiding principles during discussions and considerations of the following elements.

### Motivations or Catalysts behind E-learning Projects

As with the many structural variables across institutions, the origins for an e-learning initiative are likewise diverse: both the internal composition and external pressures create unique circumstances and considerations influencing the pursuit of an online course or program. The gravity and urgency of these variables not only determine where and how innovative ideas originate, but further influence the scope of the endeavor. Finally, before discussing the source and content of these roots, it is necessary to make a distinction on syntax: defining all instigators for change as either a “catalyst” or as a “motivation” is misleading, as the two are not necessarily synonymous. Such is the distinction between being convinced and being compelled: some actors may feel forced based on circumstance, others may possess an internal interest to pursue such a project. There is an array of possibilities even within these divisions. Noting this contrast is not to commend one over the other, but only to underscore a simple reality.

Institutional leaders *especially* must be mindful of this distinction as they approach and interact with the different actors and constituencies involved in or affected by an e-learning project. Substantial literature, both theoretical but more importantly meta-analysis of case studies on implementation, stress that leaders should not attempt to subvert or negate these important differences and risk alienating or angering crucial partners, but instead frame the end goal, an e-learning course or program, in relation to

the greater mission of the institution.<sup>72</sup> Rarely will this prove a smooth and easy task: the course of the institution may have deviated from the mission statement for sometime, for better or worse, and may need to be realigned if not redefined, a problematic endeavor in itself. But the benefit of appealing to a greater unifying mission is critical for providing a “clear understanding [to] faculty of why the institution is implementing online learnings”<sup>73</sup> and equally important, in projecting a *continued* commitment to the project. Institutional interviews and faculty responses from the Online Education Benchmark Study showed unequivocally that among schools in which such endeavors had been successfully implemented, “if online initiatives had not been included in these larger strategic planning processes—indeed, had those initiatives not been recognized as an institutional priority both in writing and rhetorically by campus leadership—they would have waned.”<sup>74</sup>

### Financial Catalysts

For many schools, a minor if not predominant motivation for adopting an online program is related to the financial landscape. MOOCs, as previously discussed, are geared toward increased revenue from greater student enrollment (and at a substantially cheaper production cost). It has already been reasonably assumed that online courses or programs for students *within* the institution are fundamentally different - and this distinction extends to the financial reasons for development. Though like MOOCs, some

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<sup>72</sup> Abel, ““Implementing Best Practices in Online,” 75; Richard J. Majuka, Min Shi, and Curis J. Bonk, “Critical Design and Administrative Issues in Online Education,” *Online Journal of Distance Learning Administration* 13, no. 9 (Winter 2005); PDF; Anderson and Zawacki-Richter, *Online Distance Education: Towards.*

<sup>73</sup> *Ibid.*, 76.

<sup>74</sup> McCarthy and Samors, *Volume 1: A Resource*, 15.

schools may be mobilized toward increasing revenues by educating more students, but these are *degree-seeking* students - another distinction previously discussed.

Though “determining whether online learning is more or less cost-effective than other alternatives does not lend itself to a simple yes or no answer,” the U.S Department of Education’s *Understanding the Implications of Online Learning for Educational Productivity* report outlines four general ways institutions are seeking to use e-learning to reduce costs:

- 1) Increasing the rate of student learning by increasing motivation and student time on task and helping students grasp concepts and demonstrate competency more efficiently;
- 2) Reducing salary costs by redesigning processes to allow for more effective use of teacher time, increasing teacher-student ratios or transferring some educational activities to computers;
- 3) Reducing facilities costs by leveraging home and community spaces in addition to traditional school buildings;
- 4) Realizing economies of scale by leveraging initial development costs as broadly as possible.

Institutions may seek to educate more students *per course* or program. Others aim primarily to reduce the time-to-degree for a growing student population that would otherwise overwhelm the structural capabilities of offering only face-to-face courses, and thus enable rather than stifle the number of incoming enrollees. While the latter problem is attributed mainly to public universities in discourse, enrollment growth is a worldwide phenomenon. “The global tertiary-enrollment ratio—the share of the student-age population at university—went up from 14% to 32% in the two decades to 2012; in that time, the number of countries with a ratio of more than half rose from five to 54.” To put

that into perspective, “University enrollment is growing faster even than demand for that ultimate consumer good, the car.”<sup>75</sup> The variables in some situations may require that an institution pursue online learning as a means to attack *both* of these confounds. In these scenarios, the monetary outcomes are one variable in a specific efficiency equation, in which “productivity is a ratio between costs and outcomes that can be improved in one of three ways: by reducing costs while maintaining outcomes, improving outcomes while maintaining costs or transforming processes in a way that both reduces costs and improves outcomes.”<sup>76</sup>

As will be discussed in greater depth later in this analysis, schools *must* remember that this is a long-term endeavor, and the monetary benefits will accrue over time. The Board must confer the realistic expectations to all financial stakeholders at the very beginning so as to avoid controversy down the line, should unrealistic expectations remain unmet by an equally unrealistic deadline, clarifying that e-learning projects “require initial investments, but successful efforts reduce costs over the long term, even after these initial investments are taken into account.”<sup>77</sup>

Monetary impetus, however, can stem from not one, but two directions. Those discussed above represent examples generated from *within* the institution itself. Another internal impetus relates to other operational and budgetary aspects: for example, the cost to educate a student born by the school, or cost-per-pupil, is higher than ever before. The

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<sup>75</sup> “The world is going to university: More and more money is being spent on higher education. Too little is known about whether it is worth it,” *The Economist*, March 28, 2015, accessed March 28, 2015, <http://www.economist.com/news/leaders/21647285-more-and-more-money-being-spent-higher-education-too-little-known-about-whether-it?zid=316&ah=2f6fb672faf113fdd3b11cd1b1bf8a77>.

<sup>76</sup> Bakia et al., “Understanding the Implications of Online Learning,”:V.

<sup>77</sup> *Ibid.*

cost-per-pupil, though historically higher than listed tuition price, has risen in part *because* of technology - which can be expensive to purchase and implement, even more so for the latest or most “cutting-edge” offering. Furthermore, globalization and the many luxuries afforded with technologies have yielded a different expectation of what a “college experience” entails from that held by past generations. The concept encompasses not only expectations related to academics, but also to the increasingly novel “perks” offered to lure potential students. Coupled with declines in government funding, this trend has been especially unkind to public institutions. Private institutions too though have recently shown some push-back, specifically against the growing cost in the use of such “perks,” and their potential to detract and distract from students’ academics pursuits and undermining the educational integrity of the college.

The more infamous concern, given the recent outcry over tuition hikes, exacerbated by a dramatic increase in out-of-pocket costs over the past two decades,<sup>78</sup> originates from the opposite direction: the consumer. Students and their families are pleading for institutions, both public and private, to address this trend. Different schools face varying degrees of financial pressure: public schools are traditionally *expected* to be cheaper than private institutions, but as a result of dramatic drop in direct state funding over the last three decades (true across the vast majority of states), they too have raised tuition considerably. This trend has been doubly painful at public institutions: state

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<sup>78</sup> “The world is going.”

funding directly to students has also taken a substantial hit, increasing the total consumer expenditure on a degree both as a percentage of the total *and* in real terms.<sup>79</sup>

In this regard, schools have two options: to do *more* with each dollar, or to find a way to lower the operating costs of educating students. There are, of course several ways either of these dilemmas can be addressed and e-learning is but one. While by no means the simplest path – cutting perks for example, would be a much quicker fix – e-learning has the unique ability to fulfill one, if not both of these conundrums. Given the established growth in online courses across the higher education spectrum, an online-based “solution” to monetary concerns can simultaneously address the issue of institutional relevancy, and potentially improve student-learning. Scaling back “perks,” by contrast, could harm a school’s relevancy or appeal when compared to the offerings of other institutions. It certainly would not facilitate deeper learning.

Though online-learning has yet to demonstrate as significant impact on the cost-curve of higher education as a *whole* as many have hoped – including MOOCs in the equation - there is promise as some individual institutions have seen a drop in the cost-per-pupil. Looking at just one minute cost-cutting aspect, “conducting a bulk of learning activities online, costs associated with copying materials (e.g., paper, ink, teacher time) and paperwork can be greatly reduced. According to one estimate, for copying materials alone, online learning can potentially achieve a saving of \$2.2 billion per year at the national level, based on an estimate that schools save \$40 per student each year.”<sup>80</sup>

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<sup>79</sup> Sandy Baum and Jennifer Ma, *Trends in College Pricing* (The College Board, 2014), 22-23, PDF.

<sup>80</sup> Thomas Greaves et. al., *The technology factor: Nine keys to student achievement and cost-effectiveness*. Project RED. Shelton, CT: MDR. (2010) quoted in Bakia et al., “Understanding the Implications of Online Learning,”:31.

It will, of course, be some time and require continued online growth and data points, before claims about the effect of online learning on the higher education system *at large* can profess true validity.<sup>81</sup>

### Student Demand

Student-oriented demand, in economic terms, is sure to drive increased innovative measures so that higher education can accommodate the increasing number of enrollees: while attending college is no longer a luxury in the sense of scarcity (though for many a luxury *financially*) for all the societal benefits of mainstream post secondary education, the influx of students simply too much for the current institutional offerings, both financially as discussed above, but also in terms of other “inputs” like the number of professors, physical space etc. These numbers are only going to continue to grow, especially if federal policy has any say: easing student loans and pressuring schools to lower barrier-to-entries for students’ otherwise unable to attend, while simultaneously increasing the total number of graduates are all elements of the current agenda. Other organizations are on board as well; “The National Association of System Heads, for example, has organized 11 state systems of colleges and universities behind one big goal, and that is to produce 350,000 more graduates by 2025. The University Innovation Alliance, which is a group of 11 public research universities from all over the country, has committed to producing 68,000 more college graduates by 2025.”<sup>82</sup> Should even a portion of these ambitious numbers be realized, institutions must innovate and adapt to handle the influx. (See Appendix A) Furthermore, they must seek out reliable ways to do

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<sup>81</sup> Bakia et al., “Understanding the Implications of Online Learning,”:30.

<sup>82</sup> Barack Obama, "Remarks by the President" (speech transcript, College Opportunity Summit, Ronald Reagan Building, Washington D.C., December 4, 2014).

that does not sacrifice quality; a highly educated society by numbers is ineffectual if graduates are not truly “educated.”

For some institutions, a more direct type of student demand may be a minimal to significant impetus for incorporating online courses in the academic framework: a recent survey conducted by The Boston Consulting Group revealed that “students across all demographics and backgrounds now want to mix online only, blended, and traditional classroom courses to create a learning experience that combines virtual and traditional settings.”<sup>83</sup>

Furthermore, student demand calling for the development of or expansion of an e-learning project may not be derived solely from the financial catalysts mentioned in the previous section. Surveys and case studies affirm that for students who have taken an online course, the flexibility afforded by many configurations was a substantial and consistent motivation for enrolling.<sup>84</sup> This is a major motivating factor for students have not yet taken a course online (or in blended format) but are considering one in the future. Students overall are “demanding much greater interactivity and connectivity” from their educational experiences.<sup>85</sup> Students additionally appreciate the accessibility of online course materials that are not only more “relevant and dynamic” but are increasingly less expensive and quicker to obtain than purchasing physical books etc.<sup>86</sup>

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<sup>83</sup> Allison Bailey, Christine Barton, and Katie Mullen, *The Five Faces of Online Education What Students and Parents Want* (The Boston Consulting Group, Inc., 2014), 3-4, PDF.

<sup>84</sup> Maggie Hartnett, Alison St. George, and John Dron, "Examining Motivation in Online Distance Learning Environments: Complex, Multifaceted, and Situation-Dependent," *International Review of Research in Open and Distributed Learning* 12, no. 6 (October 2011): accessed April 7, 2015, <http://www.irrodl.org/index.php/irrodl/article/view/1030/1954>.

<sup>85</sup> *Ibid.*, 6.

<sup>86</sup> Bakia et al., “Understanding the Implications.”;31.



It must be acknowledged, however, that at some institutions - and likely more schools in the future - some variables may limit students' freedom of "choice" when it comes to class format. These include the school size, GE requirements, or individuals' chosen major etc. In these scenarios, student demand for online courses, or student-specific motivations may be all but moot. An extensive research project by The Boston Consulting Group entitled *The Five Faces of Online Education* accounts for this scenario, but segmenting the entire student population into five groups reflecting different attitudes toward and motivations for taking online courses:

1. True Believers: as the name suggests, these students believe e-learning provides a "great alternative to traditional, in-person education, rather than as an integral part of the full menu of educational offerings... are the most to online education and [see] very few inherent barriers to future adoption."
2. Online Rejecters: these students are critical of the quality of online education, and skeptical of the effect reputation of such programs will have on employment.
3. Experience Seekers: while they share many traditional beliefs about the college experience, these students value the "experimental, social and emotional benefits of education." Furthermore, "it does not matter greatly to them which form their education takes, so long as they achieve their goal of a degree for personal and social advancement."
4. Money Mavens: The defining characteristic of this segment is the view of education as a "transaction" rather than an experience; these students seek a "return on their investment" via post-graduate job and financial stability.
5. Open Minds: These students are essentially up-for-grabs when it comes to the future of online education: should e-learning offerings meet their standards of quality while providing "benefits beyond those of traditional classrooms, such as greater interactivity with professors and peers," these students will become "True Believers."<sup>87</sup>

Institutions and their leaders must acknowledge the composition of their existing and incoming students, while also anticipating shifts in the future that may influence or

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<sup>87</sup> Bailey, Kaufman, and Subotić, *New Vision for Education*, 8.

alter demand. (Refer to Appendix B for further characterization of the *Five Faces*) To some degree, students will always self-select into institutions that meet their needs, and as these “needs” may be academic- or experience-based, as opposed to financial constraints, schools may to some extent be able to control the rate of online-adoption. Nonetheless, predictions regarding growth in the number of students and in the growth of online education as a whole suggest “Traditional models will not reach most of the population in the future.” As numerous case studies and implementation research have well established, there is no uniform solution for all institutions. Those that “thrive, will have both better insights about students, as well as better strategies and responses tailored to those insights.”<sup>88</sup> Ironically, technology itself has the power to provide the data to inform these insights.<sup>89</sup>

#### Changes In Pedagogy and Reforms of Learning Outcomes

“American graduates score poorly in international numeracy and literacy rankings, and are slipping. In a recent study of academic achievement, 45% of American students made no gains in their first two years of university.”<sup>90</sup> This one example of many sobering statistics regarding recent college graduates in our country, casting doubt on current and future students’ outcomes as well. The White House has even addressed this fall from intellectual-grace, with President Obama in 2009 calling for new “standards and assessments that don't simply measure whether students can fill in a bubble on a test, but whether they possess 21st century skills like problem-solving and critical thinking

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<sup>88</sup> Bailey, Kaufman, and Subotić, *New Vision for Education*, 9.

<sup>89</sup> Richard Barrington, "What College Can Learn From Big Data," edcetera, accessed February 2, 2015, <http://edcetera.rafter.com/what-colleges-can-learn-from-big-data/>.

<sup>90</sup> “The world is going,”.

and entrepreneurship and creativity.”<sup>91</sup> Tying achievement in higher education to the health and security of the nation’s economy, the Obama administration’s Higher Education agenda is twofold: as already discussed, the first tenet calls for an increase in the number of degrees (the U.S is currently ranked 12th in four-year degree attainment, compared to 1st in 1990) by emphasizing not only greater access, but greater completion rate: over half, but nowhere near a 100% of college students graduate within 6 years.<sup>92</sup>

The second focus was to improve outcomes. The 2013 release of the U.S Department of Education’s controversial College Scorecard, though under the guise of “helping students to choose a school that is well-suited to meet their needs” by providing, in essence, a cost-benefit analysis for individual schools, likewise seeks to motivate institutions to improve their “returns” by increasing transparency and holding them accountable for value and quality.<sup>93</sup>

Some point to documentation of a continual and dramatic decrease in the time current students’ devote to academics compared to previous generations, to explain these dismal outcomes.<sup>94</sup> Others believe that traditional institutions are simply lagging behind in providing what the modern tech-centric and globalized world needs from graduates.

Some attack the *content* of the education itself, but this argument is both difficult to

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<sup>91</sup> Barack Obama, "Remarks by The President to The Hispanic Chamber of Commerce on a Complete and Competitive American Education" (address transcript, The Hispanic Chamber of Commerce, Washington Marriott Metro Center, Washington D.C, March 10, 2009).

<sup>92</sup> "Higher Education," The White House, accessed March 1, 2015, <http://www.whitehouse.gov/issues/education/higher-education>.

<sup>93</sup> "Education Department Releases College Scorecard to Help Students Choose Best College for Them," U.S Department of Education, last modified February 13, 2013, accessed March 30, 2015, <http://www.ed.gov/news/press-releases/education-department-releases-college-scorecard-help-students-choose-best-college-them>.

<sup>94</sup> Philip Babcock and Mindy Marks, *Leisure College, USA: The Decline in Student Study Time*, research report no. 7, Education Outlook (Washington, DC.: American Enterprise Institute for Public Policy Research, 2010), 3.

define and to measure given the breadth of majors, concentrations etc., offered across higher education: even where some content may not lend itself well to practical application, who has the authority to completely erase an entire field from the academic landscape?

Conversely, others are re evaluating traditional instruction practices. Lecture formats, for example, have been criticized as making students “passive” learners and call for new methods emphasizing student creation and self-driven learning, with professors playing the role of “guide” rather than lecturer. Others bemoan that most learning is *synchronous*, meaning education, instruction, and learning occurs at the same time,<sup>95</sup> requiring professors and students to attend “class” - be it in a physical classroom or online - at pre-set structured times that are both inconvenient for the modern student, and also negate individual differences that may result in different paces of learning. Self-paced learning, they argue, allows for students to learn at their own speed and, hopefully, will result in better learning outcomes. By contrast, *asynchronous* learning is when instruction and activities do not necessarily occur at the same time. Research shows, however, that these different methods are beneficial for different kinds of courses and learning activities: this suggests that these two need not be mutually exclusive - either in the mind of professors and educational reformists nor in the ultimate configuration of a course. Students may in fact benefit from a hybrid.<sup>96</sup> Other suggestions to rectify “problems” of instructions include more personalized learning, project-based learning, community-based learning and more.

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<sup>95</sup> "Synchronous Learning," in *Glossary of Education Reform* (n.p.: Great Schools Partnership, 2014)], accessed April 6, 2015, <http://edglossary.org/synchronous-learning/>.

<sup>96</sup> Stefen Hrastinki, "Asynchronous & Synchronous Learning," *Educause Quarterly* 4 (2008):51-52, PDF.

Still others call for a reform of the ways in which student learning is *assessed*: this argument focuses not on content, but how students' are called upon to, in effect, prove they have truly grasped material beyond base-level concepts. This argument calls for more dynamic approaches to assessment that demonstrate "authentic" or higher-order learning,<sup>97</sup> and or ability to apply concepts and skills to real-world situations.<sup>98</sup>

Proposals for competency-based programs (CPBs) have becoming increasingly common as a solution to assessing students' knowledge and practical skills. Instituted CPBs have been successful for many schools, and some argue that they are particularly amenable to online coursework, whereby "students earn credit based on what they can prove they've learned rather than how long they've sat in class."<sup>99</sup> Of course, course-configuration, internal school requirements, and general accreditation concerns, which will be discussed in Chapters 5 and 6, will largely determine whether the course, regardless of the validity and practicality of the learning metric, obligates students to fulfill a certain hour requirement.

Employers, too, have bemoaned that students entering the workforce are ill-prepared for it.<sup>100</sup> This puts further pressure on defining the learning and skill development students *should* acquire from college. Some use this to argue for an overhaul on the actual content of education, others on the means of assessment of the current content, requiring more rigorous assessments of student learning to demonstrate

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<sup>97</sup> Audrey Rule, "Editorial: The Components of Authentic Learning," *Journal of Authentic Learning* 3, no. 1 (August 2006): 1, accessed April 6, 2015, <http://www.ernweb.com/educational-research-articles/the-four-characteristics-of-authentic-learning/>.

<sup>98</sup> *The 2013 Lumina Study*, 26.

<sup>99</sup> Kelley and Hess, *Beyond Retrofitting: Innovation in Higher*, 8.

<sup>100</sup> *The 2013 Lumina Study*, 23-26.

true competency of the material and or real world-application ability. Interestingly, employer surveys reveal they are wary of e-learning in higher education.<sup>101</sup> This is ironic given that many industries are nonetheless using online mediums to educate and train employees: of course, if these are recently-graduated individuals, perhaps employers view their usage of these programs as remedial learning *because* of inadequate or ill-suited college education, whereas older individuals who have long-since left college may not be expected to have learned certain skills. In this scenario, e-learning would be viewed as new training or skill development rather than “remedial.”

Institutional leaders anticipate employer hesitancy, which may be in direct opposition to the various other pressures toward online learning: “The proportion of academic leaders who believe a lack of acceptance of online degrees by potential employers is a barrier has remained at just over 40 percent.”<sup>102</sup> Though not a majority, this figure is clearly a significant plurality.

Interestingly, despite well-documented faculty resistance and skepticism toward online education and that shown by employers, there is evidence to suggest that rest of the population is not only much more open to e-learning, but may in fact be *for* it. The Boston Consulting Group survey, for one, revealed a “surprisingly positive view of online education” among students *and* parents.<sup>103</sup> Given “the younger generation’s digital-native status as early and heavy users of multiple forms of technology and devices” it is reasonable to expect a degree of confidence from students, whose comfort

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<sup>101</sup> Ibid., 27.

<sup>102</sup> Allen and Seaman, *Changing Course: Ten Years*, 6.

<sup>103</sup> Bailey, Barton, and Mullen, *The Five Faces of Online*, 2.

with technology very well cause them to advocate for these tools in the classroom. That an older generation not only views online learning favorably, but actually “advise their children to pursue degrees with at least some online component,” however, marks a significant shift in the perceived legitimacy of e-learning as an academic platform.<sup>104</sup>

There is plenty of evidence to suggest that growth in e-learning persists even where of changes in pedagogy or reforms of learning outcomes are *not* motivations for development. Concerns over productivity, as briefly posited in the discussion of monetary catalysts, emphasize the *method* of instruction over content: how can material be delivered more efficiently? This pragmatic question, of course, encompasses elements of cost as well as the number of students taking the course, ease of delivery, etc. The bottom line is this: even those resistant to e-learning for ideological or pedagogical reasons may adopt it, not to produce *new* outcomes, but to use it a mechanism to achieve *the same* outcomes. There is evidence to indicate that more and more individuals *believe* online courses are meeting this benchmark: 2014 survey data shows that 77% of academic leaders believe online learning to be the same *or* superior to face-to-face courses - up 20% from 2003. This number increases when limited to academic leaders at schools with an e-learning program already implemented.

From this vantage point, online courses have in some ways less to prove, at least in terms of learning outcomes; to be deemed successful academically, e-learning projects must demonstrate that they are at least “*as effective as* traditional alternatives [if not providing] quality improvements that *enhance and improve* traditional instruction but as

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<sup>104</sup> Ibid., 5.

such need to demonstrate gains in learning quality or rate of learning to justify the additional expenses.”<sup>105</sup> This passage rightly acknowledges that even where cost is not the primary catalyst for innovation, in the current atmosphere of financial constraint, it will inevitably be a factor *at some point*. Depending on the monetary flexibility (or lack thereof) of the institution, the outcomes *do* need to be superior to those of traditional courses, and must be differentiated enough to warrant altering the current system. The degree of necessary difference, or conversely, how much of a financial “hit” a college may be willing or able to take to achieve outcomes unrelated to cost, can only be determined on a school-by-school basis.

Whether the institution is compelled in the name of new pedagogies or discerning more learning outcomes, *everyone*, including policymakers want to schools to be more liable: “Regardless of whether individual students (or their parents) pay for services or if these services are provided from the public wealth, there is an ever-increasingly call for accountability that online and campus education systems are producing a quality product.”<sup>106</sup> If the content in online courses changes, or if e-learning platforms must merely be able to exhibit comparable outcomes on the *same* material to those of existing courses, data will be crucial to validate not only the worth of the individual online program, but to justify and prove that of the institution itself.

#### Funding the Initiative: Outside Sources and Internal Revenue Structures

Regardless of whether budgetary constraints are a motivation for pursuing an e-learning project or from one (or several) of the other catalysts discussed, the source of

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<sup>105</sup> Ibid., 3.

<sup>106</sup> Anderson and Zawacki-Richter, *Online Distance Education: Towards*, 25.



funds to cover the initial start up costs (at minimum) will inevitably influence the overall agenda. Many of the schools that have existing online components confess that “securing and distributing financing was the most pressing issue they faced in developing and sustaining online learning programs.”<sup>107</sup> The feasibility of the actual project and transition is only part of the monetary equation; assuming that the institution and its leadership are committed to maturing a sustainable online strategy, whether for educational or budgetary reasons, the financial implications of scaling a long-term project must also be considered. Schools must adopt “strategies that take into account the difference between resources needed to start a program and resources needed to sustain and/or grow a program.”<sup>108</sup> Many schools have failed to incorporate such measures into their budget, or adequately convey the full extent of need to financial investors. At best, this will likely stall the progress or expansion of the course or program; worst-case scenario, not only would the project be abandoned, but the mere conception of online learning may be tainted, inhibiting future endeavors. The importance of securing sufficient funding from stakeholders, who understand the expectation of slow rate of return, cannot be overemphasized.

So where do institutions receive their funding, or who might they enlist? This in part may depend on the type of school, and by extension, the specific motivations or catalyzers for an e-learning project: does the idea stem from *within* the institution itself? Or are outside factors instigating the innovation? The answers to these inquiries in turn

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<sup>107</sup> McCarthy and Samors, *Volume 1: A Resource*, 24.

<sup>108</sup> *Ibid.*

lead to additional questions about the source of funds. Some institutions, for example, have extremely secure investment revenue that far surpasses that coming in from even the steepest tuition rates and may have sufficient existing funds to institute a program (and some with significant financial “buffer” to allow greater experimental freedom) without foundation or campaign assistance. (Appendix C) These include primarily prestigious schools like Princeton and Yale but also some lesser-known institutions including Agnes Scott College, Cooper Union and College of the Ozarks. Interestingly, a mere 75 institutions in the U.S control over 70% of all collegiate endowment funds, but account for a much smaller percentage of all undergraduates. (Appendix D)

The majority of institutions that educate the greater portion of students, however, are significantly more tuition-dependent. This may or may not be a motivation for online implementation. Tuition-dependent schools are much more likely to resort to outside assistance to help fund the initiative. The degree of financial assistance sought from or provided by outside bodies depends on many of the variables previously discussed: the motivation or catalyst for such projects, as well as the anticipated scope of the endeavor are factors that can impact not only the source of financial support, but the size of the grant or “ask.”

Regarding the “resources that sparked both the development and the sustainability of online programs on their campus, many institutional participants cited external foundation or federal government grants (U.S. Department of Education Title III and V programs), state or system appropriations, and seed money from the chief academic officer’s office,” according to The Online Education Benchmark Study conducted by the

APLU and Babson Survey Group.<sup>109</sup> As this report dealt strictly with state and land-grant universities, private universities or small colleges will likely need to resort to other mechanisms for the bulk of project funding.<sup>110</sup> But given dwindling government sources at both the state and national level, even public institutions likely need additional private funding - either today or in the future. Many of these institutions are state schools, and in a national climate of declining government support, may be minimally able to rely on the state for financial support for program development, a cruel reality given that public and political pressures are often those calling for innovation measures to decrease tuition fees and or enroll more students. In the most dire state higher education systems, like that in Louisiana in which an expected 82% cut to the new budget for public colleges and universities is being dubbed a “doomsday scenario,”<sup>111</sup> institutions may be completely on their own to find the funds, either by trimming the current budget or turning to third parties.

It must be understood by all stakeholders that initial start-up funds must be supplemented by additional funds, with the goal of creating not only a quality program or course, but also a sustainable one. Both the quality and long-term viability of an e-learning project requires continued evaluation and updates, when necessary. Development and initial implementation must be succeeded by continued support for faculty and students, a necessity that must be incorporated to the budget from the beginning, predicting needs and usage as best as possible.

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<sup>109</sup> Ibid.,25.

<sup>110</sup> Ibid., 27.

<sup>111</sup> Elizabeth Crisp, "Higher ed officials consider ‘doomsday’ funding scenario," *The Advocate* (Baton Rouge, LA), March 30, 2015, Politics, [Page #], accessed March 31, 2015, <http://theadvocate.com/news/politics/11949560-123/higher-ed-officials-consider-doomsday>.

Here again, institutional leadership can have a tremendous impact: presidents, for example, are the most visible representatives both on and off campus - speaking to students, paying-parents, as well as alumni to articulate the goals and financial need of an online initiative. Boards of directors many times include key alumni - in terms of financial and influential clout, and can be helpful as a direct source of funds, or as a means to appeal to the greater alumni base for support. It should be noted however, that in many cases alumni donations or major gifts from third parties are earmarked for non-academic purposes. Establishing a campaign with a specific goal may be more effective in ensuring that generated funds will actually be directed toward this goal.

Realistically, external funds alone will rarely be sufficient to fully fund the initial development of a large e-learning endeavor, or even to sustain projects of any size, that will also require continued assessment and possible amendments to be truly impactful. Re-evaluating existing revenue streams and institutional budget allocations is a pragmatic and necessary course of action, regardless of whether amendments are ultimately made to create an online program. Should subsequent changes be made, leaders need to add the unfortunate and controversial task of trimming department budgets etc., to the already daunting task of convincing faculty members to teach (or at least support) the project. The accounting and infrastructure needed to understand the financial feasibility are far beyond the scope of this paper, and many variables too school-specific to warrant an in-depth analysis and recommendation, no less a widely applicable conclusion. A summary of the general approaches some schools have adopted that is limited observation rather

than prescription, is sufficient for summarizing models administrative leaders may consider.

Some institutions “have turned to both intra-departmental revenue-sharing plans and stand-alone revenue plans in order to sustain their online learning efforts, especially when technological and instructional design costs are supported by multiple units on campus. These revenue-sharing plans range in complexity.”<sup>112</sup> In the simplest form, some funds are derived directly from enrollment tuition and given directly to the department offering the course; at the other end of the spectrum, more complex plans “often involve sliding-scale schematics that reward returns on risk and complexity of delivery supported by academic departments, online learning units, or both....With these models, academic units usually negotiate with technical support and/or distance learning units for revenue proportionality as a part of the program development, and they review revenue-sharing agreements on an annual basis.”<sup>113</sup> Some schools may additionally adjust fees for all students “to support campus-wide technology environments and related technology purchases necessary to support and grow these programs,” which though at first seems to contradict the desire to lower tuition costs, is intended to do so by ultimately distributing IT costs across *more* online and onsite students in the long run.<sup>114</sup> Other institutions have turned to what are dubbed “e-rates” or “altogether different tuition structures charged to

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<sup>112</sup> McCarthy and Samors, *Volume 1: A Resource*, 26.

<sup>113</sup> Ibid.

<sup>114</sup> Ibid.

students enrolled in online courses... used exclusively to offset the cost of support for specific online courses and programs.”<sup>115</sup>

While at first glance, these more intricate revenue-sharing plans may seem too intimidating, interviewees at institutions using these models note a number of benefits. “First, participants remarked that these types of plans engage all the players in the decision making process. As a result, everyone is accountable for, and vested in, the success of the program. Second, revenue-sharing plans localize decision making by allowing units and departments to decide how they will reinvest the money. Third, revenue-sharing models provide an empirical undergirding that makes decision making fiscally transparent.”<sup>116</sup> Of course, the precise circumstances and motivation for pursuing an online initiative will affect the type of revenue path most optimal for the institution, and that which is ultimately implemented; given the various pressures, the model that would best serve the school pragmatically and that which its constituents allow may be entirely different.

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<sup>115</sup> Ibid., 25-26

<sup>116</sup> Ibid.

## Chapter 3: Practical Components and Faculty Engagement

### Getting the Ball Rolling: Initial Administrative Issues to be Addressed

The previous chapters established the crucial need for the institutional governing body to play an active role in the overall project, and the array of possible origins behind such an initiative. But these constitute only the preliminary “higher-order” considerations; a study by the Alliance for Higher Education Competitiveness of 21 institutions who described *themselves* as having been successful in implementing online learning found that the two factors ranked most important were *executive leadership and support* and *faculty and academic leadership commitment*, followed closely by *student services* and *technology infrastructure*.<sup>117</sup> Not only must administrators play the part of “cheerleader” by engaging and continually motivating other actors during the process of creation and implementation, they must also provide the tangible infrastructural support necessary to facilitate all aspects of an e-learning project, from beginning to end. Creating an “environment conducive to technology adoption” requires leaders’ full commitment, not only in word, but also *in action*. Supporting faculty and students with the necessary tools and training allows these cohorts to focus on *their* respective roles: teaching and learning.

Prior to introducing an online project to Indiana University campus’ Kelley School of Business, Magjuka, Shi, and Bonk conducted a thorough review of case studies of other institutions’ experience to inform the process of implementation. (Shown in the source-format in Appendix E). These findings have been validated by numerous other

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<sup>117</sup> Rob Abel, “Implementing Best Practices in Online Learning: A Recent Study Reveals Common Denominators for Success in Internet-supported Learning.” *Educause Quarterly* 3 (2005): 75, PDF.

implementation-research studies, though they are often articulated differently. Given how minor these differences are - be it the *number* of “priorities” or the specific synonym chosen for the same idea, the list above is sufficient for clearly articulating the fundamental issues. However, Appendix F provides an additional example list of paramount administrative concerns from The APLU Sloan Commission report for comparison.

Despite the ample research on pragmatic concerns faced during development and implementation of an e-learning project, recommendations are limited largely to articulating the need to address these factors but rarely include *tangible* tools for facilitating the process. Meyer and Barefield sought to fill this void, developing two useful tools for organizing and characterizing various elements of the process. (Appendix G) The Administrative Support Matrix (ASM) “provides a process that can be followed or modified to meet the needs of university systems that differ in size or objective,”<sup>118</sup> thus adhering to DBIR principles, and segmenting the general administrative duties outlined in past research into an *actionable* pseudo-checklist for leaders and developers to use not only in guiding the planning stages, but as an ongoing point of reference for providing cross-departmental support.

The consensus reflected across these lists of overarching priorities, the Administrative Support Matrix - which again, gain their validity in being derived from real school experience rather than small-scale experiments - is the need for some degree of centralization. Administrative oversight, as suggested by the integration-model, though

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<sup>118</sup> Amanda C. Barefield and John D. Meyer, "Leadership's Role in Support of Online Academic Programs: Implementing an Administrative Support Matrix," *Perspectives in Health Information Management / AHIMA, American Health Information Management Association* 10 (Winter 2013): 3, PDF.



perhaps not *ideal* in the eyes of faculty or IT professionals, is a practical and tactical. “Centralization,” however, does not mean that the primary body tasked with the development of the project agenda be a homogenous or in some way sequestered from the diverse daily college operations. In fact, schools most satisfied with the implementation and, more importantly, the *continued* development of their e-learning project have found quite the opposite, emphasizing “the benefits of forming a *task force or advisory committee* to prepare their campus for online learning.” Those deemed most productive and useful were those with a diverse composition including “representatives from academic affairs, faculty—particularly those already experienced in online learning, deans and department chairs, representatives from faculty and student support units, information technology specialists, and representatives from other areas of the university that would be directly or indirectly impacted by online learning.”<sup>119</sup>

These experiences, though contrary to organizational theories and practices of specialization, reflect a more realistic approach to the complex process of implementing new innovations within the dynamic academic environment. Furthermore, experiential evidence suggests that maintaining some form of “*task force after online programs have been established and have begun to grow and mature*” can improve the likelihood of project success. These committees can help to “address new or unforeseen issues that arise or examine and advise campus leaders on proposed changes in financial and

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<sup>119</sup> McCarthy and Samors, *Volume 1: A Resource*, 14.

administrative structuring, or policies and procedures,”<sup>120</sup> providing a more effective way and less institutionally-disruptive means of pursuing e-learning.

Faculty: Fundamental Considerations to Secure Participation

77% of Academic leaders rated the learning outcomes in online education as the same or superior to those garnered in traditional face-to-face courses.<sup>121</sup> These findings, however, must be made with a few caveats. First of all, “Academic leaders at institutions with online offerings have a much more favorable opinion of the relative learning outcomes for online courses than do institutions with no online offerings,” which is unsurprising, and again underscores the importance of leadership at the highest level in facilitating online adoption. Secondly, the findings of this report focus solely on “online learning “defined as “in which at least 80 percent of the course content is delivered online,” choosing not to survey administrators on the use of “blended” or hybrid courses – which it defines as a course in which 30-80% is delivered online.<sup>122</sup> Given this selective designation, it may be that some academics leaders have a more favorable view of “e-learning,” when it also encompasses blended learning formats.

For the purpose of this analysis, a broader definition of ‘e-learning’ blending these two percentages will be used. However, technology has so permeated even “traditional” courses that the *Changing Course* report includes courses with up to 30% web-integration into its definition of “face-to-face” courses. It is necessary to differentiate between technology use done on a small-scale – say, in just one class - from

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<sup>120</sup> Ibid.

<sup>121</sup> Allen and Seaman, *Changing Course: Ten Years*, 5.

<sup>122</sup> Ibid.

projects with a greater institutional effect. The stakes are vastly different, and thus larger projects are subject to *much* greater scrutiny. Thus, the working definition for all subsequent references to “online-learning” or “e-learning” as general concepts will comprise all course configurations with at minimum, 30% of content, delivery or activity administered online. As previously mentioned, a brief overview of various designs will be given later, so far as they relate to institutional considerations of available configurations that may suit the institution’s specific needs or objectives.

These figures, however, reflect the opinions of academic leaders, *not* faculty. Appealing to the institution’s faculty is a complex and delicate dance, however, and will be examined in greater detail further on. Interestingly, “academic leaders with greater exposure to online teaching are more likely to report it takes more time and effort to teach students,” accurately reflecting the views held by many faculty who are reluctant to support, let alone teach an online course.<sup>123</sup> This may seem to contradict the finding that academic leaders at institutions with such offerings are overall more favorable to online learning than those at schools without. However, it represents a more holistic understanding of the possible hindrances to, and true demands of online instruction.

There has been a perhaps overblown proposition and subsequent debate over the notion that the growth of online learning will drastically reduce, if not erase the need for professors. Extensive research shows that students, for one, continue to believe that quality teachers and academic mentorship are the most important and the most valued elements of their post-secondary educational experience. Furthermore, students likewise

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<sup>123</sup> Ibid., 23.

believe these same factors are critical for creating the ideal online or blending learning experiences in the future.<sup>124</sup> This provides just one example suggesting that concerns about faculty displacement are severely exaggerated, and that teachers still very much have a vital place in the academic arena - including online.

This is not to completely disregard professors' concerns about job stability; there are discussions surrounding personnel changes. The vast majority of such proposals are not the result of online learning initiatives however, but from cost pressures from both within and outside of higher education and the budget cuts or reconfigurations that have followed. While faculty are still considered essential to the academic experience, their roles are changing at many schools: many institutions, for example, are increasing the proportion of part-time faculty or associate professors, who receive lower salaries than their full-time counterparts. (See Appendix H for data on faculty roles, salaries etc.) Others are considering essentially "freezing" the tenure-track procedure, to the dismay of many professors, as a means not only to save money long term but also to ensure that all faculty remain highly active and engaged in the institution, either in teaching activities, research if not both.

Thus it is fair to acknowledge a degree of truth in faculty career concerns.

"Although somewhat controversial, some higher education programs are reported to have successfully reduced personnel costs without needing to cut full-time positions,"<sup>125</sup> it is

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<sup>124</sup> Bailey, Barton, and Mullen, *The Five Faces of Online*, 9.

<sup>125</sup> C. Twigg *Improving learning and reducing costs: New models for online learning*. EDUCAUSE Review 38 (5): 28–38 quoted in Bakia et al., *Understanding the Implications*.;29.

logical to suggest that faculty can better ensure their job security by being amenable to changing institutional circumstances that calls for a different form of “teaching.”

But it is not solely on the part of faculty to ensure a smooth transition: institutional leaders, too, need to seek ways to steer faculty in the direction of a changing educational landscape that, for many, may contradict or threaten their beliefs, engage them in the process of planning and development and most importantly, encourage professors to actually teach an online (or partially online course).

First and foremost, institutional leaders must be strategic in how they choose professors to assist in on-boarding faculty at large. Those who are most amenable to online learning and those best situated to successfully appeal to the faculty body are not necessarily one and the same. Those who garner respect - whether via seniority, achievement or even simply personal likability, are best equipped to leverage peer relationships and get faculty “buy-in.” It is thus imperative for institutional leaders to co-opt academic representatives with the greatest influence to support the e-learning initiative. It may be impossible to succeed, let alone generate a new initiative, if leaders rely only on those *already* favorable toward online education. Choosing wisely is critical.

These faculty liaisons will be imperative in assisting with determining what will motivate active faculty participation. Yet, administrators are often too hasty in pushing an agenda; failing to attend to motivations and concerns from those tasked with actually *teaching* students can breed resentment among faculty and impede the process of creating a successful and sustainable program.<sup>126</sup> In many cases, faculty is surprisingly

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<sup>126</sup> John Bruner, "Factors Motivating and Inhibiting Faculty in Offering Their Courses via Distance Education," *Online Journal of Distance Learning Administration* 10, no. 2 (Summer 2007): 2, PDF.

uninvolved in the initial stages of program development. Despite ample focus on their resistance to e-learning,<sup>127</sup> survey data suggests that faculty's absence in planning is typically not a result of their *own* doing. The sequence of the cause-and-effect relationship between faculty skepticism and lack of participation may in some cases be an unfounded assumption that should be revisited to secure greater acceptance and a smoother transition.

To assuage these concerns and garner faculty support, leadership needs to affirm that they value professors and recognize their vital contribution to student body learning. That this even *appears* to be up for contention reflects a clear disconnect between faculty and the leaders of the institution: presidents on both public and private campuses “believe strongly that faculty should be the number one drivers of change.”<sup>128</sup> But faculty are not alone in feeling they are being surpassed; presidents too see other actors as steering the boat. “As presidents view the matter, politicians are driving change, but should in fact have little say, if any. They also maintain that business people have too much influence”<sup>129</sup> and strongly feel that those currently pushing innovation “pay too much attention to cutting costs and not enough to changing the model of teaching and learning.”<sup>130</sup>

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<sup>127</sup> Scott Jaschik and Doug Lederman, eds., *2014 Survey of Faculty Attitudes on Technology* (Washington, DC: Insider Higher Ed, 2014), 7-9, PDF.

<sup>128</sup> Maguire Associates, Inc., *The Innovative University: What, 5*.

<sup>129</sup> *Ibid.*, 14

<sup>130</sup> *Ibid.*, 5

However, most presidents simultaneously feel faculties are “failing to step up to the plate.”<sup>131</sup> This can partially be explained by faculty reluctance *because* they feel, and often are, being largely undermined in the process. This is an unfortunate feedback loop that further underscores the need to reassert that faculty is valued. But once again, recognition will fall on deaf ears if not reinforced with action: leaders will be far more successful in gaining support if faculty are used as a partner throughout the process.

Numerous studies on faculty motivation for adopting online education over the course of two decades show an overwhelming tendency to emphasize intrinsic rewards over external incentives such as increased compensation or stipends.<sup>132</sup> Surprisingly, these “generally parallel the same reasons why faculty teach traditional courses.”<sup>133</sup> The top “personal and socially derived benefits [for teaching a distance course] are: a) the ability to reach new audiences that cannot attend class on campus; b) the opportunity to develop new ideas; c) a personal motivation to use technology; d) an intellectual challenge; and e) overall job satisfaction.”<sup>134</sup> Two notable intrinsic motivations more unique to e-learning specifically, are the scheduling flexibility provided by teaching an online course, and the “opportunity to carve out professional niche.”<sup>135</sup> Were faculty motivations tied exclusively to extrinsic motivations, institutional leaders might have an easier time getting them on board. Offering a tangible incentive – such as throwing

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<sup>131</sup> Ibid., 14

<sup>132</sup> Wolcott, L. L. & Betts, K. (1999). “What’s in it for me? Incentives for faculty participation in distance education,” *Journal of Distance Education*, 14(2).

<sup>133</sup> Angie Parker, "Motivation and Incentives for Distance Faculty," *Online Journal of Distance Learning Administration* 6, no. 3 (Fall 2003): accessed March 4, 2015, <http://www.westga.edu/~distance/ojdla/fall63/parker63.htm>.

<sup>134</sup> Bruner, "Factors Motivating and Inhibiting," 2; Wolcott. “What’s in it for me?”

<sup>135</sup> Ibid.

money at those willing to teach online would, in theory, be a much easier “fix” than tying e-learning to internal motivation, especially if the traditional face-to-face course already fulfills those same desires. Nonetheless, highlighting the connection between the old and the new for faculty - the desire to teach - is useful in that it can establish a sort of “constant” amidst a substantial change, much in the same way appealing to the institution’s mission statement can help “validate” an e-learning project.

However, targeting any type of reward-paradigm (intrinsic or extrinsic) is futile if *disincentives* for teaching online are too strong or too numerous. Some faculty concerns can be avoided at the onset with a smart strategy. For example, the perceived “threat” posed by an online program as an encroachment on one’s teaching domain, can be avoided if faculty are engaged early on in the development process. This may seem self-evident, and yet faculty members are in reality rarely consulted in the initial stages, often brought in once major decisions have already been made. Imposing pre-set agendas on faculty understandably results in resentment, as does seeking their input later in the process as if an afterthought. This tendency is compounded by the fact that for most e-learning projects, third party consultants and designers are recruited facilitate the transition of a traditional course to one online, seeming to validate faculty concerns over loss of discretion over the course’s content and instruction – if not their job in general. Leaders would do well to point out that the “recent arrival of blending learning contexts, in which parts of a learning sequence are facilitated online and parts in face-to-face classrooms, demonstrate that all teachers - even those who don’t see themselves as



distance educators - are compelled to acquire many, if not most of the skills of a dedicated distance educator.”<sup>136</sup>

Another related means of demonstrating that professors are valued, and addressing a major faculty barrier to online adoption, is providing exceptional infrastructural support. Here too presidents feel that “faculty don’t get enough support in rethinking how to teach their courses in hybrid formats,”<sup>137</sup> so providing not only some form of initial training, and more importantly, establishing mechanisms to afford continued support for those teaching such courses – be it technical skills or otherwise - is essential. These concerns will be addressed in the subsequent chapter on IT capability and technology support.

Related is the potential, even *likely*, need for some form of technical development prior to the course for a professor making the “switch” to a virtual classroom, is the belief that teaching an online course will, while offering some greater flexibility nonetheless require a greater time commitment than teaching a traditional face-to-face course. Interestingly, this holds true regardless of whether the instructing professor actually *designed* the course: even if the course and content was developed by someone else, be it another faculty member, department committee, or outsourced to a private education platform, the majority of professors *still* believe they will need to devote more time when teaching an online course than a traditional course.<sup>138</sup> Considering that ongoing technical

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<sup>136</sup> Anderson and Zawacki-Richter, *Online Distance Education: Towards*, 22.

<sup>137</sup> Maguire Associates, Inc., *The Innovative University: What*, 20.

<sup>138</sup> McCarthy and Samors, *Volume II: The Paradox*, 6.

training via workshops, seminars or IT “office hours” for professors has proved beneficial to the success of new online programs, this perception may be valid.

Should a particular online course or program in fact require an additional time commitment - which may be partially related to the topic or selected course format - the *effect* can be equally diverse. Both institutional and professor-specific variables can influence how the additional time “input” for an online course may lead to reorganization of policy or reprioritization of academic activities. Some institutions, for example, require faculty to teach a minimum number of courses per quarter/semester. Administrators should consider whether or not to adjust this condition for professors who elect to teach an online course<sup>139</sup> especially if it is a new one and likely to require a heightened degree of monitoring and adjustment. “For example, teachers’ time may be covered by their contracts and therefore not entail an additional cost incurred by the online learning program. However, if teachers spend time providing online instruction, the system incurs an ‘opportunity cost’ for other possible uses of those hours that are lost.”<sup>140</sup>

The “opportunity cost” may not always be at the expense of instructing another course. “An additional issue concerns engaging faculty in online learning in the early stages of their careers. Time preparing for online teaching may translate into time away from preparing grant proposals and securing external research funding, which is especially critical for tenure-track faculty in a climate of constrained state resources and endowment losses.”<sup>141</sup> The disincentives wrought by external climate are further

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<sup>139</sup> McCarthy and Samors, *Volume 1: A Resource*, 32.

<sup>140</sup> Bakia et al., “Understanding the Implications.”; 9.

<sup>141</sup> McCarthy and Samors, *Volume 1: A Resource*, 33.

exacerbated by internal precedents: “some campus promotion and tenure policies lag behind the teaching and curricular innovations represented by online learning. As a result, campus policies that do not expressly acknowledge these efforts may in fact discourage or serve as a barrier to entry for *junior faculty on a tenure track*” who might otherwise be inclined or at least open to teaching an online course.<sup>142</sup>

There are, however, several ways that faculty may benefit from teaching an online course: “Visualizations of learning progressions and student development made possible through learning management systems and other online data systems may offer an opportunity to make the educator’s workload lighter by providing targeted input to lesson planning and attempting to address individual student needs,” which clearly aligns with professors’ interest in providing quality and efficient education to their students. “ In addition, some online learning models are designed to transfer certain routine activities, such as skills practice and test preparation, from teacher-based whole- or small-group instruction to activities that students can conduct independently on a computer. Proponents of these models claim that this use of online learning allows class time to focus on activities and discussions that take greater advantage of teacher skills and real-time interaction with students.”<sup>143</sup>

In conclusion, administrators should consider a range of incentives to encourage faculty to develop and or teach online courses. While *overall* faculty may be less motivated by financial benefits and more by student-centered factors or personal opportunities for growth, monetary compensation may seem a fair remuneration for

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<sup>142</sup> Ibid.,

<sup>143</sup> Bakia et al., “Understanding the Implications.”, 24.

increased time commitments that teaching (if not developing) a new online course may require. A different or supplementary approach may include nonfinancial incentives such as “training, course release time, or provision of hardware or software” for faculty interested or willing to take on the responsibility of a new online course.<sup>144</sup> Reevaluating existing faculty-advancement policies - whether to disband them completely, or to adjust them in order to encourage participation from faculty at all levels, may be a difficult but necessary step given the degree and immediacy of the need for online courses some schools face, if not to otherwise or also reflect the long term commitment to these innovative measures.

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<sup>144</sup> McCarthy and Samors, *Volume 1: A Resource*, 32.

## Chapter 4: Technical Concerns

### IT Structure and Capability

Many schools may be relieved to learn, contrary to much public discussion, that the feasibility of an online project does not necessarily require the creation of an entirely new or independent Information Technology department, or outsourcing to a private party. “Rather, it often has meant the reformation, reorganization, or reclassification of an existing unit,” according to the administration and faculty responses gathered in the Online Learning Benchmark study.<sup>145</sup> Furthermore, institutional evidence suggests that “costs of Internet-based distribution seem to be relatively low in settings where an adequate technical infrastructure is already installed”<sup>146</sup> Distribution costs, though, are categorically different from development costs, which will likely be high. However, reliable infrastructure channels can further capitalize on the benefits of leveraging the startup costs “across many students by reusing digital course materials” by ensuring it is the most efficient and reliable.

Ensuring IT capability is “adequate,” of course, is related to the scope and complexity of the online project: what course, or how many courses? How many students served? How many faculty? These are just a few of the components that administrators need to consider during the development process, and furthermore, need to closely monitor during the roll-out of the premier course. While in some ways these first courses are “experimental” to some degree - subject to evaluation and adjustment - they are nonetheless inherently different from the experimental research studies discussed in the

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<sup>145</sup> Ibid., 21-22.

<sup>146</sup> Bakia et al., “Understanding the Implications.” 31.

introduction. The students enrolled in these courses, regardless of the type of requirement it fulfills, be it GE, elective or major, are unlikely to view their education as an “experiment.” Institutions, likewise, must match the seriousness with which students approach these courses with tenacity and diligence. Anticipating not only the minimal IT needs to support the endeavor, but planning ahead for potential obstacles signals respect for students’ education as well as a commitment to pursuing a successful and quality e-learning initiative.

### Faculty Tech Support

In some cases, getting faculty “on board” may actually be the easier endeavor: the more delicate (and perhaps more important) step may be ensuring that professors teaching online courses have the necessary technological aptitude. The specific skill-set will, of course, depend on a number of course- and design-specific variables and thus will vary to some degree for each instructor. Before any of these elements are confronted, however, administrators must establish a more general agenda for “the range of resources and support that most effectively encourage and sustain faculty engagement in online learning.” These can be grouped into three primary areas: “professional support for course design and delivery, faculty incentives for development and delivery of online content, and institutional policies concerning intellectual property.”<sup>147</sup> Developing a comprehensive and feasible plan for providing faculty support will not only be useful for preparing the budget for the initiative, but it will furthermore reflect an acknowledgement

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<sup>147</sup> McCarthy and Samors, *Volume 1: A Resource*, 27.

of the new responsibilities of online instruction, and a commitment to supporting faculty throughout.

Faculty training workshops held prior to the course, and at many schools, routinely throughout the course duration, has been doubly useful. Not only do these workshops empower faculty with relevant skills, but can also serve to alleviate some of the disincentives, “including removing the sense of isolation that teaching online might create... and building a sense of community among online faculty.”<sup>148</sup>

The Online Benchmark Study revealed that workshops however, only offer a limited amount of useful support if not supplemented by ongoing technological support. Much like students, faculty need to be able to seek out additional help in between scheduled general workshops. These “office hours” must be readily available to provide support for more specific topics, or additional individual instruction, and of course any unforeseen snags in the online delivery of lectures, tests etc. Unfortunately in the experiences at most public schools and likely the case at private as well, these crucial support units are often “only able to maintain small staffs to provide both training for course design and delivery support—and this is a source of concern if demand for those services grows in the future.” Thus, “any potential deficiency in or diminution of support services could have direct implications on faculty engagement and overall course and program quality.”<sup>149</sup> In this sense, the comfort afforded by the *distribution* capabilities of existing IT departments, may be eroded by the need to expand other aspect of technology

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<sup>148</sup> Ibid., 28.

<sup>149</sup> Ibid., 30.

support, either today or in the future should an institutions online offerings continue to grow.

Based off the Administrative Support Matrix previously discussed, Meyer and Barefield developed the Online Teaching Infrastructure Matrix. (Appendix I) This tool provides a means for those who actually *perform* the online-instruction to evaluate the support, both structural and technical, they receive from their administration. Detailed descriptions of each “factor” offer clarification and explanation of the item so that the faculty can clearly understand what measure they are evaluating, and its intended level of support. Furthermore, the matrix offers validation for each factors’ inclusion, by including the study(s) documenting its importance in the successful administrative and technical orchestration of an online course. In this assessment, the importance of the technical component cannot be understated.

### Student Tech Support

Students in online courses or program need two types of support: academic and technical. The quality and accessibility of academic support must at be at the *very least* equal to that afforded in a face-to-face course. Not only is this necessary for the benefit of the individual student, but also as a means for the institution to fairly/adequately assess the learning outcomes from an online course compared to the traditional face-to-face format, especially during initial offering. Whether offering in-person opportunities or “virtual office hours,” instructors must be available for additional out of-class interaction, just as they would be expected for *any* course. Interviews regarding “Virtual office hours” as a means for this support were actually quite positive: in general students not



only felt comfortable interacting with their professors this way (likely related to increasing comfort with technology) but have appreciated the additional flexibility resulting from either simply not having to commute to a physical location or an increase in the total number of hours' faculty are available, if not both. These sentiments reflect two of the same motivations and demands some students' have expressed *for* the implementation of online courses; likewise, flexibility for students is one of the primary motivations 80% faculty cite for *teaching* an online course.<sup>150</sup> Some faculty also express flexibility for themselves as well, though this contradicts the vastly held belief that an online course requires more time to even to teach - regardless of whether or not that professor develops the course.

Teachers Assistants (TAs) may be another valuable means of providing academic support to online students, especially if the course is designed and intended to service a large number of students (a General Education requirement, or Introductory level course, for example). TAs are already standard facilitators for traditional classes at many public institutions and commonly found for large courses at private schools as well. Using these resources for e-learning courses as well may help to allay some of the concerns surrounding decreased student learning as a result of reduced face-to-face time, especially during the first one or two semesters of the new online version of the course). It may also help to assuage faculty concerns about the additional time demand for teaching an online course, allowing some of the work to be delegated out to TAs, either in the form of grading assignments, or in by taking on some of the student consultation hours. TAs

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<sup>150</sup> McCarthy and Samors, *Volume 1: A Resource*, 39.

would of course need to be factored into the budget, and potentially provided technical training much like faculty depending on the scope and nature of their duties.

But academic support is only part of the equation for students enrolled in an online (or partially online) course. The quality of the course is moot and value of the academic support mediums compromised if the e-platform is unreliable or un-navigable for students. Currently, most of this support comes via “help desks” run by the central IT department of the institution. While most students surveyed in the Online Benchmark Study were satisfied with the overall technical support offerings, there are a number of caveats that must be addressed. For one, these students attend public institutions, some of which have substantially larger IT departments than those at private or even smaller public schools. Thus, the latter schools may need to assess the feasibility of providing adequate support to online students with the existing IT infrastructure and may consider expanding or reorganizing the department, if not establishing a stand-alone department solely devoted to facilitating smooth online-courses. Again, this depends on the scope of the project itself; one course versus an entire program would naturally require different degrees of support. The institutions’ future intentions too may dictate the shape of technical support: a large-scale transition to online courses in the foreseeable future may warrant establishing a large IT department at the forefront, even if the initial offerings are limited to a few courses.

Furthermore, though currently able to provide sufficient technical support via their centralized IT departments, even large public schools with existing online programs may need to reevaluate as the number of courses and/or students taking courses online

grows. The current infrastructure at the vast majority of these schools is responsible for the technical support of students enrolled in online courses as well as those in traditional face-to-face classes. While able to handle the existing demands and varied needs of these different cohorts, growth in the number of online courses and or students may complicate and overtax these units, to the detriment of *both* types of students. Similarly, scaling the technical support in tandem with online growth, and recalibrating as needed will be crucial to meeting the needs of both groups.

Schools may also need to consider providing designated computers in campus labs for online students. Though the majority of students today have a personal computer, a technological “emergency” will have a different if not substantially more adverse impact on students taking an online course in comparison to their peers. In a traditional courses a broken or malfunctioning computer is undeniably problematic, but in most cases the damage would be limited to lost or delayed assignments; rarely will class learning be completely inhibited (though many students will no doubt be frustrated by resorting to the archaic means of pen and paper note taking...) Conversely, an online student - especially one enrolled in a course with a *scheduled* web lecture or activity - will be at a severe learning disadvantage if their personal computer breaks.

Administrators may need to plan for these scenarios, for though not liable for the actual hardware, the institution is responsible for ensuring that (paying) students are, to the best of their ability, able to learn and access class

Finally, students themselves may need some sort of training or online “orientation.”<sup>151</sup> Computer “self-efficacy” has been found to be strongly correlated with both anticipated course success, and may influence actual learning outcomes.<sup>152</sup> Institutions implementing online courses likely to affect many students, regardless of the students’ personal proclivity to take an online course, should consider a mandatory orientation or assessment prior to ensure that enrolled students have the minimum technological skills to take the course: no students’ learning should be inhibited *solely* due to individual technical savvy (or lack thereof).

Should the online course or program be hinged more upon student self-selection into the course, however, it may be reasonable (and cost-efficient) to forego such an assessment and assume students’ possess adequate tech-proficiency. Concerns over students’ personal abilities with online mediums may not be needed in the future as individuals become increasingly comfortable with technology, and as e-learning becomes increasingly common in elementary and secondary education. Future generations of incoming students’ self-efficacy with technology may make “online orientations” unnecessary and furthermore, may lessen the amount of *academic* oriented support institutional IT departments provide, and thus be replaced by a greater emphasis on hardware repair and distribution operations.

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<sup>151</sup> Leah A. Geiger et al., "Effect of Student Readiness on Student Success in Online Courses," *Internet Learning* 3, no. 1 (Spring 2014): 73-84, PDF.

<sup>152</sup> Maura Ignazia Cascio, Valentina Concetta Botta, and Vanda Esmeralda Anzaldi, "The role of self efficacy and internal locus of control in online learning," *Journal of e-learning and Knowledge Society* 9, no. 3 (September 2013): 103-104.

"True genius resides in the capacity for evaluation of uncertain, hazardous, and conflicting information." Winston Churchill

### Ch.5: Accreditation and Project Evaluation

Internal institution and department-specific requirements are not the only benchmarks administrators and faculty will need to consider and negotiate during the development of an online course: though by no means unimportant, these are much more flexible than those imposed by the greater accreditation bodies governing higher education as whole.

These external organizations are entrenched and historically revered bodies within the traditional higher education environment and exert their influence is establishing requirements and benchmark standards for degrees and certificates across almost all fields. These organizations are a powerful force for determining the “legitimacy” of virtually any program - traditional or online - offered by an institution. The general reluctance towards MOOCs is, in part, a reflection of the skepticism shown by existing accrediting bodies, or the lack of formally acknowledged body to oversee the quality of instruction and achieve some degree of standardization for desired learning outcomes. “It’s evident in the process of accreditation, whereby the credentials of each institution are certified or renewed by a panel of academics that represent entrenched institutional interests. (Not surprisingly, accreditation agencies are often skeptical of new approaches to instruction and credentialing.)”<sup>153</sup> But this final observation reflects an academic tradition that is no longer protected behind the sanctity of precedence; freedom and

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<sup>153</sup> Kelley and Hess, *Beyond Retrofitting: Innovation in Higher*, 3.

liberalization of accreditations may change over time not only as online learning continues to change the landscape of higher education, both in and outside of the traditional institution. Accreditation reform is especially likely given the huge push towards competency-based education, which is gaining traction not only among employers, cost-conscious students, but increasingly so among educators in support of reform.

Nonetheless, the precedent and tradition of adherence to these institutions necessitates that schools at least bear certain standards in mind during course creation. To completely disregard these established standards risks alienating or hindering the future career or academic advancement of students and faculty who pursue these courses *anyway*. Furthermore, doing so adds a disincentive to those who might otherwise be inclined, but who fairly choose to prioritize the pursuit of a program or degree recognized as “legitimate” outside the college boundaries.

The standard means of amassing course credit “and other measures of educational attainment have been tied to “seat - time,” that is how many hours the student spend in a classroom with a certified teacher”<sup>154</sup> not necessarily on mastery of the material - in some cases based very *little* on proven learning or application. Additionally, in this tradition “it does not matter if the student could master the required material more quickly or not.”<sup>155</sup> Many online courses - whether in blended format or completely online - are likely to require some sort of credit-hour standard for the foreseeable future given those maintained for accreditation of “legitimate” degrees, even with potential improvements in

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<sup>154</sup> Bakia et al., “Understanding the Implications of Online Learning,”:27

<sup>155</sup> Ibid.

assessment measures. But perhaps this is a good thing, until online courses are closer to “perfection.” Data enables professors and administrators to monitor if certain materials were opened at all, or if and how long a student watched a pre-recorded lecture or video, for example, and comparing these to student learning outcomes may help them not only pinpoint content or activity areas in which students are struggling, but to ascertain *why*: at the individual level, “immediate feedback loops established in online learning environments can also support the customization of learning content for individual students.”<sup>156</sup> In this sense, some sort of “attendance” requirement may be helpful, if not for a specific student who may very well have been able to demonstrate his or her skills more quickly, but for the continued development of the course itself and the success of *future* students. Once a course or program has sufficient time to bloom, more advanced versions will support “diagnostic assessments and frequent and individualized feedback, which may in turn suggest a move toward competency-based systems. In this model, once students demonstrate a desired level of mastery they can move on to new topics and new skills” and productivity in terms of diminished “filler” time for the individual student, and perhaps greater institutional efficiency in that more students can be educated *overall*, without sacrificing the quality of content.<sup>157</sup>

But this represents a long-term benefit, for which it is still too early to profess that online education will ensure given how recent the medium is compared to face-to-face education, and even more so when narrowed to the experience of a particular institution. There is still plenty to learn: for example, “the available research does not speak to

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<sup>156</sup> Ibid., 22.

<sup>157</sup> Bakia et al., “Understanding the Implications of Online Learning,”:34.

guidelines for practitioners regarding how and under what circumstances teachers, mentors or facilitators can best be deployed through online interactions rather than face to face. The issue of appropriate teacher credentials and teacher- student ratios is far from resolved, and more research is needed regarding appropriate roles for teachers given particular students and content.”<sup>158</sup> However, in pursuit of some of these unanswered questions, it is important to reiterate the cautions warranted by DBIR: establishing such “guidelines” may not be unwise, and potentially dangerous to the success if done prematurely: each school possesses unique attributes and addresses factors differently, such that a standard set of guidelines or practices may be ineffective or in some cases counterproductive if mis-applied to an institution that has vastly different traits. Compared to primary and secondary education, higher education does possess a greater degree of flexibility and discretion when it comes to instructional practices - less “uniform” (though still in many ways bound by accreditation requirements); still there is far greater freedom across higher education. This extends to faculty, who while perhaps limited in part by institutional or departmental guidelines, have significantly more personal discretion than primary or secondary school teachers who must adhere to more federal and state laws regarding education.

In sum, institutions seeking to develop and maintain accredited programs need to consult standards in multiple areas: (1) establishing learning outcomes, and thus the chosen means of student assessment and (2) instructional configuration including “credit” hours both in class and the lab when applicable (both of which will be readdressed in the

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<sup>158</sup> Ibid.



discussion of course design), but potentially also in the way in which the e-learning “intervention” project is evaluated *overall*. Thus, while acknowledging the influence of accrediting bodies may seem more directly relevant to the forthcoming discussion on course design, given the overarching presence external standards play in the overall development and implementation process, it seems pertinent to include it here preceding the discussion of project evaluation considerations.

### Evaluation Methods and Scale

The assessment and analysis of the new online program as an institutional endeavor is distinct from the means of evaluating individual students *in* the course, though undeniably related. The chosen means of measuring student learning - tests, exams, activities etc. - are elements more directly relevant to the development of the course itself, and thus will be discussed in greater detail in the subsequent chapter on design.

Selecting the appropriate means evaluating an innovation is an important aspect of the planning process: the validity of any conclusions regarding the success of an e-learning project necessitates that the means of evaluation are established *before* implementation. Too often measurements are chosen post-facto after results have been gathered. This can lead to erroneous or unfounded conclusions as a result of bias and or a mismatch between the gathered data or observations and the selected measurement tool. Regardless of how favorable the outcome, it is critical for all involved to adhere to all tenets of rigorous and valid research practice. For these reasons, administrators must practice due diligence and determine the type of outcomes they wish to measure and the

appropriate assessment tool: to cut corners in this regard jeopardizes not only financial investment, but faculty time and effort, and most importantly students' education.

“Any given program is likely to have a range of possible outcomes. Selecting the most salient outcome or outcomes to measure is a case-by-case decision,”<sup>159</sup> related to the interaction of multiple variables discussed throughout this paper. Whereas predetermining the measure and method that *will* be used to assess the innovation, the validity of conclusions is equally hinged upon post-facto *comparison* to the outcomes documented from existing face-to-face course; this is true regardless of the chosen “outcome” so long as they are identical between the two versions of the course. This may seem an unnecessarily obvious observation, but given a startling amount of published research relying solely on the outcomes of the “experimental” online group to draw conclusions, it seems important to assert. Furthermore, there is an overwhelming reliance on student satisfaction surveys, undeniably valuable and interesting data in some respects, as the only measure of “success” in a vast amount of experimental and design research. The use of surveys and student attitude measures as the only means of evaluation are insufficient on their own. Administrators, students, and all involved or impacted will benefit in choosing additional learning-related measures, in keeping with DBIR, to better understand the true learning capabilities and cost-ratios of online programs instituted in a *real* institutional environment as a part of a student's true academic experience.

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<sup>159</sup> Bakia et al., “Understanding the Implications.”; 10.

Regardless of whether financial incentives initially spurred the development of the project, monetary cost-benefit analysis will always be included in the post-implementation evaluation. “With respect to costs specifically, institutions need to consider both total costs and per- student costs of online learning relative to conventional instruction...Moreover, cost drivers in an online environment differ from those in face-to-face environments, suggesting a crossover point for student enrollment numbers at which one format becomes more cost-effective than the other.”<sup>160</sup>

Whether the results of the financial analysis definitively dictates the future of the program, depends both on the degree of the ratio and the financial stability and flexibility of the institution. However, if the project is *substantially* more expensive than the existing method without yielding at least comparable outcomes (or comparable with feasible adjustments in the next offering), even the most endowed schools will likely postpone if not scrap continued development and resource allocation for the course or program. For example, “an online course that requires teachers to replicate traditional lecture formats and deliver the bulk of instructional content verbally to passive listeners at the same teacher- student ratios—but does so online—will incur ongoing costs per student that may exceed the cost of instructional materials per se.”<sup>161</sup>

Likewise, whether or not changing pedagogies or improving/redefining learning outcomes acted as an impetus for the e-learning project, should results suggest a dramatic and severe decline in student learning when compared to those of students of traditional course, serious considerations about the quality and perhaps the worth of the project as a

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<sup>160</sup> Bakia et al., *Understanding the Implications*; 31.

<sup>161</sup> Bakia et al., *Understanding the Implications*; 31.

whole must be made. Administrators must consider these realities, but even more so by those designing and delivering the course and the task committee overseeing the actual implementation and initial rollout.

In addition, it is critical to acknowledge certain realities and limitations while establishing what measures will ultimately be used for evaluating the success of the e-learning project: for one, “Technology infrastructure costs may decrease with emerging information technology solutions such as cloud computing, but development and management costs constitute non-trivial expenses that are expected to persist.”<sup>162</sup> These inherent long-term costs must be appropriately built into evaluation benchmarks and expectation in the planning stage, and perhaps *more* importantly, remembered come time to actually assess the financial outcomes.

Learning outcomes will inherently be more complex, as they will vary based on institution and project-specifics. Furthermore, as evidenced by the movement for *different* forms or measures of student achievement, the chosen method for evaluating the online programs’ students and its academic value as a whole may be additionally complicated by competing or opposing ideologies.

One suggestion given in *The Economist* offers an interesting example of this predicament, by suggesting that “Common tests, which students would sit alongside their final exams, could provide a comparable measure of universities’ educational performance. Students would have a better idea of what was taught well where, and employers of how much job candidates had learned. Resources would flow towards

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<sup>162</sup> Ibid., 29.

universities that were providing value for money and away from those that were not.”<sup>163</sup>

While this method of assessment very well may afford these benefits, it is only “beneficial” so far as the test *truly* measures student learning: this would no doubt incite opposition from both teachers, students, and employers who decry either the reduction of students to “numbers” or find fault with the content of the material itself - a criticism that continues to plague even long-held traditional measures like the SAT.

From an administrative standpoint, institutions would no doubt cringe at the added distribution responsibility, faculty at the imposition of yet *another* standardized test, and students at an additional exam - one with content or emphasis that may not mirror that learned in class. Such a means of assessment would need not only unprecedented planning and coordination across universities *and* accrediting bodies, but flawless and easy execution within the institution to be able to assuage these concerns, and provide meaningful feedback.

On the other hand, given the concern over the quality of higher education *overall*, online mechanisms would surely be the most pragmatic and efficient means of conducting such cross-institutional measures of learning outcomes.<sup>164</sup> Furthermore, given that research has consistently supported the notion that students perform best in the conditions or environment in which the material was learned, students who have been educated even partially online may actually outperform their peers on tests administered this way.

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<sup>163</sup> "The world is going,".

<sup>164</sup> "The world is going,".

Depending on the motivation for implementation the course, as well as the chosen design/configuration, administrators may also choose to measure also by less-visible outcomes in conjunction with those gauging student material understanding: such as better time student and/or instructor time usage. For example, and partially online course (i.e. blended/hybrid) may allow students to cut down time otherwise used as “lecture” time and use resulting allocated in-class time bringing up clarification items and/or demonstrating applying the knowledge. Conversely, in response to data, instructors may be able to gauge how should use the lecture time: what items are students ‘getting’ or what may they need further instruction on? This will, hopefully, *also* improve learning outcomes for the course<sup>165</sup> but at the least will cut down on time “reviewing” unnecessary material- that which students *already* understand and/or reducing the amount of time spent clarifying material on one’s *own* or in office hours (often done on an individual basis) done outside, and transferring these activities to the in-class time. The goal is, for both student and professor, more productive use of designated class time in hope that the learning and teaching will be more efficient.

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<sup>165</sup> Andrianes Pinantoan, "Learning Analytics: Leveraging Education Data [Infographic]," *informED* (blog), accessed February 2, 2015, <http://www.opencolleges.edu.au/informed/learning-analytics-infographic/>.

“If education is always to be conceived along the same antiquated lines of a mere transmission of knowledge, there is little to be hoped from it in the bettering of man's future...” -Maria Montessori

## Chapter 6: The Course

### Determining Which Course or Program is Best-suited for Online Development

Determining which course, courses or program to transfer to an online format, depends, again, on several institutional variables. Should a motivation for creating an online program have been to decrease-time-to-degree, for example, administrators and faculty (presuming they are working in tandem given the previous discussion of multifaceted committees and collaborative partnerships) may elect the first classes offered online to be General Education requirements that all, or a large majority of the student body must take to graduate. Depending on the design format and other logistical particulars, transferring a GE to the web may allow for more students to take the course at any given time, free up the availability of physical classroom for other courses etc. Student demand, by contrast, may channel online development toward a particular major or field for example. Faculty willingness, too, may dictate which courses are offered.

Administrators likely will refer to research and the experiences at other institutions: some fields, or even courses *within* these fields may be more conducive to a virtual classroom.. Many studies, for example, cite increased learning outcomes for courses like statistics or physics, suggesting that perhaps numerical studies or those benefiting from virtual conceptual models, can actually *benefit* from the transition to e-learning. Of course, given the various limitations previously discussed, some studies must be reviewed with an air of caution. However, these benefits have been replicated across

many different designs and for various cohorts, so there is reason to believe these areas have potential.

From a different vantage point, courses of this nature may be easier for faculty at large to accept; some may see math and science courses as being more conducive to online learning, in comparison to writing or philosophy, for example. But even these inferences are merely conjecture: not only will some individuals, regardless of field, inherently believe in the necessity and value of face-to-face classroom environments, but in the opposite direction, technology has yielded new ways for online collaboration and creation that are arguably just as conducive to the humanities if not more convenient for students. These considerations provide yet another example of the need for increased DBIR-style research in which online courses are used across the academic spectrum.

What courses are transformed into online courses - and who will teach these courses - is only half the equation, however: there can be contention over who actually *designs* the course, though it appears to be a case-by-case issue, the Online Education Benchmark study finding that at “some institutions, the role of the technology division in course design raised some concerns around staffing and expertise, while at other institutions it did not appear to be an issue.”<sup>166</sup> This is interesting because of the overwhelming perception that developing an online course is significantly more time-consuming than that for traditional course, as previously discussed in the chapter on faculty engagement. Given that control over design becomes problematic at *some* but not all schools suggests a number of possible explanations: (1) regardless of the expectation

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<sup>166</sup> McCarthy and Samors, *Volume 1: A Resource*, 23.



of additional time commitment needed to develop material for an online, some professors are willing to make the commitment in order to retain control over the curriculum, (2) there are some professors who are willing to relinquish control over course design and content: whether because they genuinely trust the academic “expertise” of the technology staff, or if they do not, may be willing to concede control over design *because* it is time consuming and (3) the way that schools and professors negotiate property rights for developing online courses, which have the potential for both market value and academic distinction awards etc., varies from school to school; some institutions insist upon retaining full patent or copyright over the design, which can be a disincentive for faculty to devote additional time to course development when, at the majority of schools regardless of stance on *development*, faculty are not currently given accolades for *teaching* an online course.

Any of these premises are further compounded in light of the perception that teaching an online course - regardless of the role in development - is more time consuming than providing instruction via the traditional class format. Further analysis is needed to discern whether conflict over design is related to specific variables: i.e., certain fields or courses, the selected format (i.e. do professors of classes in which the course is only *partially* online relinquish control *because* they will have the opportunity to interact with students in person?)

Thus while the overall project development and implementation benefits from collaboration in promoting engagement and legitimacy throughout the institution<sup>167</sup>,

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<sup>167</sup> McCarthy and Samors, *Volume 1: A Resource*, 15.

“whether IT or academic affairs should have primary responsibility for instructional design and support in the course development phase appears to be a question open to further consideration.”<sup>168</sup>

#### Course Design: An Overview of Models

\_\_\_\_\_ Per the principles laid out by DBIR theory, design and implementation must be united in the cohesive and collaborative agenda. An overview of several models, however, will provide a general summary of the paradigms institutions may consider in during the design process. Ultimately though, each school must consider certain course models for *itself*, to the extent that it meets specific objectives and functions within given limitations.<sup>169</sup> So long as due diligence is done to identify differences and anticipate potential complications, there is no reason past research and experiences at other schools cannot be used to inform discussions of design.

Those tasked with designing the new course have several models to choose from. The plethora of working “definitions” for these various models results in more general concepts, devoid of hard-nosed specifics. The designer - be it primarily a faculty member or academic IT designer - is given a great deal discretion about the exact configurations of instruction, and the measures and *location* of assessments, a controversial issue even in traditional classes (see Chapter 3). Including certain features or activities (e.g. chatrooms, wikis, simulations, etc.) is rarely *prescribed* by a model, and more so reflects the learning pedagogies of the institutional or designer. The one *consistent* element, according to surveys, is that that regardless of who ultimately designs the course, all agree the final

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<sup>168</sup> Ibid., 23.

<sup>169</sup> Means et al., "The Effectiveness of Online," 38.

“product” must adhere to the institutional and department academic standards to emphasize a non-negotiable prioritization on education amidst potential institutional “politics” when it comes to course design. In fact, “Faculty members and academic technology administrators view many of the same factors as important in judging the quality of an online education.”<sup>170</sup>

The following definitions’ language reflect models in-line with the many offered in the research, both case studies and experimental, conducted for this thesis. The sources of these selected definitions rightly differentiate from terms often (mistakenly) used synonymously in public discourse on e-learning, while still reflecting the general flexibility of these various designs.

**Online learning:** “sometimes referred to as **e-learning**, is a form of distance education. Online courses are delivered over the Internet and can be accessed from a computer with a Web browser (ex. Internet Explorer).”<sup>171</sup>

**Blended learning:** “applied to the practice of using both online and **in-person** learning experiences when teaching students....Also called **hybrid learning** and **mixed-mode learning**, blended-learning experiences may vary widely in design and execution from school to school.”<sup>172</sup>

Configurations of blended learning take many forms, incorporating online technology into the classroom experience along a spectrum best described as Supplemental to Replacement. The following definitions, sourced directly from Christensen Institute, summarize the various configurations most blending-learning

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<sup>170</sup> Jaschik and Lederman, *2014 Survey of Faculty*, 12.

<sup>171</sup> "Online Learning Defined," Keystone College, accessed April 6, 2015, <http://www.keystone.edu/academics/onlinelearning/onlinelearningdefined.dot>.

<sup>172</sup> "Blended Learning," in *Glossary of Education Reform* (n.p.: Great Schools Partnership, 2014), accessed April 6, 2015, <http://edglossary.org/blended-learning/>.

programs take: Rotation (which includes four sub-models), Flex, A La Carte and Enriched Virtual.

1. **Rotation model** — a course or subject in which students rotate on a fixed schedule or at the teacher’s discretion between learning modalities, at least one of which is online learning. Other modalities might include activities such as small-group or full-class instruction, group projects, individual tutoring, and pencil-and-paper assignments. The students learn mostly on the brick-and-mortar campus, except for any homework assignments.

a. *Station Rotation* — a course or subject in which students experience the Rotation model within a contained classroom or group of classrooms. The Station Rotation model differs from the Individual Rotation model because students rotate through all of the stations, not only those on their custom schedules.

b. *Lab Rotation* – a course or subject in which students rotate to a computer lab for the online-learning station.

c. *Flipped Classroom* – a course or subject in which students participate in online learning off-site in place of traditional homework and then attend the brick-and-mortar school for face-to-face, teacher-guided practice or projects. The primary delivery of content and instruction is online, which differentiates a Flipped Classroom from students who are merely doing homework practice online at night.

d. *Individual Rotation* – a course or subject in which each student has an individualized playlist and does not necessarily rotate to each available station or modality. An algorithm or teacher(s) sets individual student schedules.

2. **Flex model** — a course or subject in which online learning is the backbone of student learning, even if it directs students to offline activities at times. Students move on an individually customized, fluid schedule among learning modalities. The teacher of record is on-site, and students learn mostly on the brick-and-mortar campus, except for any homework assignments. The teacher of record or other adults provide face-to-face support on a flexible and adaptive as-needed basis through activities such as small-group instruction, group projects, and individual tutoring. Some implementations have substantial face-to-face support, whereas others have minimal support.

3. **A La Carte model** — a course that a student takes entirely online to accompany other experiences that the student is having at a brick-and-mortar school or learning center. The teacher of record for the A La Carte course is the online teacher. Students may take the A La Carte course either on the brick-and-mortar campus or offsite. This differs from full-time online learning because it is not a whole-school experience. Students take some courses A La Carte and others face-to-face at a brick-and-mortar campus.

4. **Enriched Virtual model** — a course or subject in which students have required face-to-face learning sessions with their teacher of record and then are free to complete their

remaining coursework remote from the face-to-face teacher. Online learning is the backbone of student learning when the students are located remotely. The same person generally serves as both the online and face-to-face teacher. Many Enriched Virtual programs began as full-time online schools and then developed blended programs to provide students with brick-and-mortar school experiences. The Enriched Virtual model differs from the Flipped Classroom because in Enriched Virtual programs, students seldom meet face-to-face with their teachers every weekday. It differs from a fully online course because face-to-face learning sessions are more than optional office hours or social events; they are required.<sup>173</sup>

Even within these subsets is substantial variation across institutions, further exemplifying the ways changing pedagogies and technology innovations are coming to fruition, sometimes in radical ways, based on case-specific variables. For example, the “Emporium Model” developed at Virginia Tech is based on the idea that the best time for learning is “when the student wants to do so, rather than when the instructor wants to teach...[thereby eliminating] all class meetings and replaces them with a learning resource center featuring online materials and on-demand personalized assistance.”<sup>174</sup> The “Buffet Model” has been used at Ohio State to “offer students an assortment of interchangeable paths that match their individual learning styles, abilities, and tastes” for an Introductory Statistics course.<sup>175</sup>

That all the models discussed have seen success at some schools (and for some courses) and failed at others, underscores the need for greater use of DBIR methodology so that future endeavors can learn from the experience of other-like schools. Furthermore,

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<sup>173</sup> “Blended Learning Model Definitions,” Clayton Christensen Institute for Disruptive Education, last modified 2012, accessed April 6, 2015, <http://www.christenseninstitute.org/blended-learning-definitions-and-models/>.

<sup>174</sup> Carol A. Twigg, “Improving Models and Reducing Costs: New Models for Online Learning,” *Educause Review*, September/October 2003, 34, PDF.

<sup>175</sup> Twigg, “Improving Models and Reducing,” 36.

the rapid pace of technological advancement combined with urgent calls for educational reform and innovation will likely produce more models and configurations in the future.

“Learning is not attained by chance, it must be sought for with ardor and diligence.”  
– Abigail Adams

### Conclusion

E-learning is spanning the globe, expanding opportunity and accessibility to more students than ever before - both for future generations and the “new normal” adult learner. Technological innovation has created an entirely new market niche for education, and likewise put direct pressure on traditional institutions to keep pace. Higher Education especially, has been expected to match the general public’s fervor for modernity, if not lead the charge into the future by producing the next groundbreaking technologies, and grooming the next generation to fulfill the needs of the modern world.

Colleges and Universities today are not merely called to “educate” - but to do so amidst a plethora of external factors that are complicating this admirable mission: schools themselves are being directly impacted by a host of economic factors, as are their incoming students, who crave not only a *quality* education and the forthcoming benefits they expect a degree to bring, but one that is affordable - both now and in the future, in light of sobering loan statistics.<sup>176</sup> Simultaneously, both state and federal funding continues the decade long trend of decline.<sup>177</sup> Though this unequally disadvantages public institutions, private institutions are not immune to public and policy pressures to curb steep tuition increases.<sup>178</sup> The matrix provided in Appendix J, though created to address the University of California system’s predicament, clearly depicts the two options

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<sup>176</sup> Adam Allington, "Average college student debt on the rise," Marketplace.org, last modified November 13, 2014, accessed April 11, 2015, <http://www.marketplace.org/topics/education/average-college-student-debt-rise>.

<sup>177</sup> Boeckenstedt, "Four Ways to Look," *Higher Ed Data Stories* (blog).

<sup>178</sup> Straumsheim, "Strategies for the Small," Inside Higher Ed; Baum and Ma, *Trends in College Pricing*.

a plethora of institutions, both public and private, are being forced to confront have to combat financial pressures,<sup>179</sup> affirming once again that innovating is the only sustainable solution.

Amidst these whirling financial pressures, schools' ability to "educate" has been called into question: some see the methods of instruction and assessment and fundamentally flawed, others criticize the content and requirements as outdated for the modern age, calling for educators to embrace new teaching paradigms and more relevant outcome measures.<sup>180</sup> These criticisms are embodied by policymakers, employers and increasingly by students,<sup>181</sup> who have seen and digested the public debate, and want to make sure that their investment - of both time and money - will *still* yield the desirable benefits that have come to be so dependent upon advanced education. Though a greater proportion of the American population holds at least a bachelors degree than a decade ago (nearly a third of 24 and older adults up from 28%, according to 2014 Census Bureau data),<sup>182</sup> the rest of the world has caught up - if not surpassed the U.S. American resurgence in higher education has become a focal point of the national political agenda,

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<sup>179</sup> Brian Fleming and Heather O'Leary, "As California Goes....," *Eduventures*, last modified January 13, 2015, accessed April 12, 2015, <http://www.eduventures.com/2015/01/california-goes/>.

<sup>180</sup> Johnson et al., *NMC Horizon Report: 2014*; Robert Kelchen, *The Landscape of Competency-Based Education: Enrollments, Demographics, and Affordability*, AEI Series on Competency-Based Higher Education (Washington D.C.: Center on Higher Education Reform, American Enterprise Institute, 2015), PDF; Hrastinki, "Asynchronous & Synchronous Learning,"; Elson Szeto, "Community of Inquiry as an instructional approach: What effects of teaching, social and cognitive presences are there in blended synchronous learning and teaching?," *Computers & Education* 81 (February 2015): accessed February 1, 2015, doi:10.1016/j.compedu.2014.10.015.

<sup>181</sup> *The 2013 Lumina Study*; Weise and Christensen, *Hire Education: Mastery, Modularization*.

<sup>182</sup> *Table A-1. Years of School Completed by People 25 Years and Over, by Age and Sex: Selected Years 1940 to 2014*, infographic (Washington D.C: U.S Census Bureau, 2015), Educational Attainment: CPS Historical Time Series Tables, accessed April 11, 2015, <http://www.census.gov/hhes/socdemo/education/data/cps/historical/index.html>.



not only because education has become in many ways an indisputable “right,” but tied to our continued economic stability and security in the globalized world.

Reclaiming the throne not only necessitates educating *more* Americans, an increasing number of whom are going abroad to earn their degree,<sup>183</sup> but in reaffirming that our institutions are of the highest caliber so that students and educators around the world once again turn first to the United States. Caliber, in the modern day, not *only* amounts to the quality and content, but also is constantly judged in regards to relevancy and modernity.<sup>184</sup> Online education, a sweeping trend with no signs of slowing, has been deemed the “solution” to many if not all of these qualms - a substantial burden and expectation for a relatively new medium for instruction and learning. Regardless of its fledgling state in the long and historic practice of education, the gravity and urgency facing traditional brick-and-mortar institutions makes some sort of innovative action inevitable<sup>185</sup>: the appeal of increased e-learning offerings -be they MOOCs, for-profit online colleges etc. - though questionable in quality, are continuing to attract students of all types who, for a variety of reasons, find these to be alternatives preferable to enrolling at a traditional college or university, and thus putting further pressure on “traditional” institutions to adapt.

There is a clear and fundamental need to find a balance between implementing technology in order to ‘keep up,’ and maintaining if not elevating the quality of education

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<sup>183</sup> Kirk Carapezza, "American students head to Germany for free college," Marketplace.org, last modified April 1, 2015, accessed April 11, 2015, <http://www.marketplace.org/topics/education/learning-curve/american-students-head-germany-free-college>.

<sup>184</sup> Malcom Brown and Phillip D. Long, "Trends in Learning Space Design," in *Learning Spaces*, ed. Diana G. Oblinger (EDUCAUSE, 2006), PDF.

<sup>185</sup>

offered. The “recommendations” stemming from a great deal of research on e-learning, however, is insufficient to adequately inform an institutional project: results are too often limited by design, size, length etc., and thus conclusions about specific and crucial aspects of certain models, *overall* are inconclusive by nature of inconsistency. Facilitated by entrenched funding practices, standard research practices are no longer suitable given the immediacy (not to mention financial constraints) facing today’s college, as precious time and resources are inefficiently wasted when research-recommendations are implemented without taking into account critical unique institutional variables. While the vast majority of schools feel the pressure to initiate changes by adopting technology (or will soon), the course of best adoption is not nearly uniform.<sup>186</sup>

The emerging field of Design-Based Implementation Research was “developed by education researchers in response to evidence that research-based innovations are often difficult to sustain or use at scale in real-world classrooms and schools” by accepting that “No single innovation works for all stakeholders in all settings.”<sup>187</sup> This methodology, which is gaining increased recognition among not only researchers, but among educationally-focused foundations and policymakers, emphasizes pragmatism and efficiency, bypassing the *translational* model of experimentation to implementation, and focusing on the actual experience within the institution.

DBIR and the focus on real-world implementations has yielded a number of important administrative concerns that every institution, regardless of size, type etc., must address in the process of developing an e-learning project, but refrains from prescribing a

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<sup>186</sup> Anderson and Zawacki-Richter, *Online Distance Education: Towards;*

<sup>187</sup> Fishman, Chang, and Penuel, "Design-Based Implementation Research," The Center for Innovative Research in Cyberlearning (CIRCL).

“solution” or best course of action, which will vary based on the aforementioned unique-attributes. These critical development areas have been the focus of this analysis.

Administrative leadership is of paramount importance, regardless of institution.<sup>188</sup>

The president and governing body are vital to the process, from beginning to end, possessing the necessary esteem and authority to both initiate and propel the initiative. It is critical, first and foremost, for these actors to determine the motivations and catalysts for the online course or program specific to their institution.<sup>189</sup> This will greatly impact all subsequent considerations, from funding, to faculty engagement, and project scope and design. While transitioning a traditional course or program to the web will require change at virtually any institution, the degree and area of change will vary. These areas may include faculty incentivization practices, intellectual property policies, re-routing of reporting lines and even alternative tuition plans, further underscoring the importance of an active administrative leadership needed to both authorize and enforce these changes in the face of any faculty, student or stakeholder pushback.

Given that few schools have the financial stability or “safety net” to develop, let alone sustain an online program without outside assistance, leaders first tasks in this process is likely to include securing funding. Federal and state funding is scant for public and private schools alike, so private foundations or alumni campaigns, for example, can be an important source of monetary support. Regardless of the source of finance, it is paramount to clearly articulate to any *stakeholder*, financial or otherwise, that the project

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<sup>188</sup> Garrison and Vaughan, "Institution change and leadership,".

<sup>189</sup> Maggie Hartnett, Alison St. George, and John Dron, "Examining Motivation in Online Distance Learning Environments: Complex, Multifaceted, and Situation-Dependent," *International Review of Research in Open and Distributed Learning* 12, no. 6 (October 2011): accessed April 7, 2015, <http://www.irrodl.org/index.php/irrodl/article/view/1030/1954>.

has long-term goals and implications, and thus an initial investment will likely need to be supplemented, and further, that the project be allowed ample time to develop before certain “returns” can be expected.

Some degree of centralization seems to be equally as critical, though the size and composition of the advisory and development committee may vary across institutions based again on the motivations, degree of faculty willingness, and scope of the premier online offering etc.<sup>190</sup> Faculty engagement and adherence to academic quality standards, however, is an undisputed necessity, requiring careful consideration of all disincentives and barriers that may prevent professors’ interest or willingness to participate in any phase of planning or development, let alone teaching a new course. Those institutions that feel they’ve seen the most success emphasize the importance of a strong faculty role from the very beginning. Many further add that continual guidance via a “task-committee” or advisory board may help in adapting to unforeseen snags as well as projecting a commitment to the endeavor and to preserving academic quality.

Providing ongoing technical support to both faculty and students is equally imperative in demonstrating the administration and school’s pledge to producing a high-caliber and sustainable program. Training workshop and “office hours” for faculty acknowledge the potential “burdens” of instructing a course via technology. Likewise, offering an “orientation,” expanding the availability and access of tech support and even supplying emergency computer stations are peremptory measures schools may consider to try to ensure as smooth an implementation as possible.

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<sup>190</sup> Abel, “Implementing Best Practices in Online,”.

Establishing the appropriate measures for the post-facto evaluation of the course or program is another vital responsibility of those overseeing the implementation of an e-learning initiative.<sup>191</sup> In light of the plethora of lofty expectation and hopes for online learning *at large*, administrative leaders must do due diligence in selecting those measures most pertinent to their *specific* institutional endeavor. While this will vary to some degree based on the motivations and catalysts for an online programs' development at each schools, financial analysis and learning outcomes will likely be at least a sub-component to any program evaluation.

When it comes to course design, however, the issue of who retains the greatest course-creation control - IT or faculty representatives - is a still a matter in contention; even those institutions with smooth administrative planning have occasionally found this aspect problematic. Accounting for school-specific factors like providing incentives for development *and* teaching, and property rights for new e-learning designs and courses that, in the current age, may possess significant commercial value.

The variety of available designs and platforms for offering an online course are numerous, and the models fairly unrestrictive. Refer to Appendix K for an interesting snapshot of just a portion of third-party providers; regardless of whether an institution employs an outside facilitator to assist in the design or delivery, this map adequately reflects just how extensive and competitive this field has become. Specifics of course design - both format, composition of online-in-person ratios, assessment measures etc. - are largely at the discretion of the designer and/or instructor of the course. Of course,

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<sup>191</sup> Jiyu You et al., "Measuring Online Course Design: A Comparative Analysis," *Internet Learning* 3, no. 1 (2014): PDF.

limitations within the institution as well as accreditation organizations are apt to be consulted, at least in the foreseeable future. Despite the aforementioned movement for educational reforms, new pedagogies and assessment measures, in order to retain degree and institutional legitimacy - a designation schools and students both value highly- designers, instructors and schools leaders must heed external standards to some degree, at least *for now*.

In conclusion, the continued growth of online learning combined with a variety of external pressures necessitates that higher education, and traditional institutions specifically, *must* respond. To delay by virtue of denial *or* because of “unanswered questions” regarding what makes a successful online course or program is not only *naive* in sheer variety and complexity of real-world elements, but will only put schools at a competitive disadvantage - to the detriment of not only the institution’s own esteem but more importantly, to the education and future achievement of their current and future students.<sup>192</sup> Apprehension is no excuse, and will be harmful in the long-run. Conversely, to assume that even with the acknowledgement of and planning for the elements discussed in this paper will definitely guarantee a smooth and straightforward transition is equally incredulous, and all claims must be approached with appropriate caution. But forethought and preparation for the inevitable glitches will surely ease the action in response when they arise.

While technology has in some ways contributed to the crisis faced by traditional institutions, more importantly the pressure generated by increased accessibility and

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<sup>192</sup> Leonhardt, "Is College Worth It? Clearly,"

opportunity has increased competition and accountability: as a result the educational-bar has been raised. We have not met it yet, and there are certainly many strides to be made, methods explored, and innovations still to be made: but with active pursuit, the country, no less the world, will benefit from higher quality and more *dynamic* education.<sup>193</sup>

Mankind was once convinced the world was flat, but today even the youngest know this to be false: what we “know” is always changing, growing and education follows suit. Our institutions, too, must not be stagnant. Entrusted to “educate,” this not only means disseminating knowledge but to empower students with the curiosity and the skills to push the boundaries into *new* knowledge: how can they impart these abilities if they are not equally open to and engaged in the process of change?

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<sup>193</sup> Kristen Hicks, "Improving Student Experience with Big Data: A Look at Civitas Learning [Infographic]," edcetera, last modified April 19, 2013, accessed February 2, 2015, [http://Improving Student Experience with Big Data: A Look at Civitas Learning \[Infographic\].](http://Improving Student Experience with Big Data: A Look at Civitas Learning [Infographic].)

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## Appendices



## Appendix A

Table 303.25. Total fall enrollment in degree-granting postsecondary institutions, by control and level of institution: 1970 through 2012

Year	All institutions						Private institutions								
	All institutions			Public institutions			All private institutions			Nonprofit			For-profit		
	Total	4-year	2-year	Total	4-year	2-year	Total	4-year	2-year	Total	4-year	2-year	Total	4-year	2-year
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1970	8,580,887	6,261,502	2,319,385	6,428,134	4,232,722	2,195,412	2,152,753	2,028,780	123,973	2,134,420	2,021,121	113,299	18,333	7,659	10,674
1971	8,948,644	6,369,355	2,579,289	6,804,309	4,346,990	2,457,319	2,144,335	2,022,365	121,970	2,121,913	2,011,682	110,231	22,422	10,683	11,739
1972	9,214,860	6,458,674	2,756,186	7,070,635	4,429,696	2,640,939	2,144,225	2,028,978	115,247	2,123,245	2,019,380	103,865	20,980	9,598	11,382
1973	9,602,123	6,590,023	3,012,100	7,419,516	4,529,895	2,889,621	2,182,607	2,060,128	122,479	2,148,784	2,045,804	102,980	33,823	14,324	19,499
1974	10,223,729	6,819,735	3,403,994	7,988,500	4,703,018	3,285,482	2,235,229	2,116,717	118,512	2,200,963	2,098,599	102,364	34,266	18,118	16,148
1975	11,184,859	7,214,740	3,970,119	8,834,508	4,998,142	3,836,366	2,350,351	2,216,598	133,753	2,311,448	2,198,451	112,997	38,903	18,147	20,756
1976	11,012,137	7,128,816	3,883,321	8,653,477	4,901,691	3,751,786	2,358,660	2,227,125	131,535	2,314,298	2,206,457	107,841	44,362	20,668	23,694
1977	11,285,787	7,242,845	4,042,942	8,846,993	4,945,224	3,901,769	2,438,794	2,297,621	141,173	2,386,652	2,277,072	109,580	52,142	20,549	31,593
1978	11,260,092	7,231,625	4,028,467	8,785,893	4,912,203	3,873,690	2,474,199	2,319,422	154,777	2,408,331	2,299,132	109,199	65,868	20,290	45,578
1979	11,569,899	7,353,233	4,216,666	9,036,822	4,980,012	4,056,810	2,533,077	2,373,221	159,856	2,461,773	2,351,364	110,409	71,304	21,857	49,447
1980	12,096,895	7,570,608	4,526,287	9,457,394	5,128,612	4,328,782	2,639,501	2,441,996	197,505 <sup>1</sup>	2,527,787	2,413,693	114,094	111,714	28,303	83,411 <sup>1</sup>
1981	12,371,672	7,655,461	4,716,211	9,647,032	5,166,324	4,480,708	2,724,640	2,489,137	235,503 <sup>1</sup>	2,572,405	2,453,239	119,166	152,235	35,898	116,337 <sup>1</sup>
1982	12,425,780	7,654,074	4,771,706	9,696,087	5,176,434	4,519,653	2,729,693	2,477,640	252,053 <sup>1</sup>	2,552,739	2,437,763	114,976	176,954	39,877	137,077 <sup>1</sup>
1983	12,464,661	7,741,195	4,723,466	9,682,734	5,223,404	4,459,330	2,781,927	2,517,791	264,136	2,589,187	2,472,894	116,293	192,740	44,897	147,843
1984	12,241,940	7,711,167	4,530,773	9,477,370	5,198,273	4,279,097	2,764,570	2,512,894	251,676	2,574,419	2,466,172	108,247	190,151	46,722	143,429
1985	12,247,055	7,715,978	4,531,077	9,479,273	5,209,540	4,269,733	2,767,782	2,506,438	261,344	2,571,791	2,463,000	108,791	195,991	43,438	152,553
1986	12,503,511	7,823,963	4,679,548	9,713,893	5,300,202	4,413,691	2,789,618	2,523,761	265,857 <sup>2</sup>	2,572,479	2,470,981	101,498	217,139	52,780	164,359 <sup>2</sup>
1987	12,766,642	7,990,420	4,776,222	9,973,254	5,432,200	4,541,054	2,793,388	2,558,220	235,168 <sup>2</sup>	2,602,350	2,512,248	90,102	191,038	45,972	145,066 <sup>2</sup>
1988	13,055,337	8,180,182	4,875,155	10,161,388	5,545,901	4,615,487	2,893,949	2,634,281	259,668	—	—	—	—	—	—
1989	13,538,560	8,387,671	5,150,889	10,577,963	5,694,303	4,883,660	2,960,597	2,693,368	267,229	—	—	—	—	—	—
1990	13,818,637	8,578,554	5,240,083	10,844,717	5,848,242	4,996,475	2,973,920	2,730,312	243,608	2,760,227	2,671,069	89,158	213,693	59,243	154,450
1991	14,358,953	8,707,053	5,651,900	11,309,563	5,904,748	5,404,815	3,049,390	2,802,305	247,085	2,819,041	2,729,752	89,289	230,349	72,553	157,796
1992	14,487,359	8,764,969	5,722,390	11,384,567	5,900,012	5,484,555	3,102,792	2,864,957	237,835	2,872,523	2,789,235	83,288	230,269	75,722	154,547
1993	14,304,803	8,738,936	5,565,867	11,189,088	5,851,760	5,337,328	3,115,715	2,887,176	228,539	2,888,897	2,802,540	86,357	226,818	84,636	142,182
1994	14,278,790	8,749,080	5,529,710	11,133,680	5,825,213	5,308,467	3,145,110	2,923,867	221,243	2,910,107	2,824,500	85,607	235,003	99,367	135,636
1995	14,261,781	8,769,252	5,492,529	11,092,374	5,814,545	5,277,829	3,169,407	2,954,707	214,700	2,929,044	2,853,890	75,154	240,363	100,817	139,546
1996	14,367,520	8,804,193	5,563,327	11,120,499	5,806,036	5,314,463	3,247,021	2,998,157	248,864	2,942,556	2,867,181	75,375	304,465	130,976	173,489
1997	14,502,334	8,896,765	5,605,569	11,196,119	5,835,433	5,360,686	3,306,215	3,061,332	244,883	2,977,614	2,905,820	71,794	328,601	155,512	173,089
1998	14,506,967	9,017,653	5,489,314	11,137,769	5,891,806	5,245,963	3,369,198	3,125,847	243,351	3,004,925	2,939,055	65,870	364,273	186,792	177,481
1999	14,849,691	9,196,160	5,653,531	11,375,739	5,977,678	5,398,061	3,473,952	3,218,482	255,470	3,055,029	2,991,728	63,301	418,923	226,754	192,169
2000	15,312,289	9,363,858	5,948,431	11,752,786	6,055,398	5,697,388	3,559,503	3,308,460	251,043	3,109,419	3,050,575	58,844	450,084	257,885	192,199
2001	15,927,987	9,677,408	6,250,579	12,233,156	6,236,455	5,996,701	3,694,831	3,440,953	253,878	3,167,330	3,119,781	47,549	527,501	321,172	206,329
2002	16,611,711	10,082,332	6,529,379	12,751,993	6,481,613	6,270,380	3,859,718	3,600,719	258,999	3,265,476	3,218,389	47,087	594,242	382,330	211,912
2003	16,911,481	10,417,247	6,494,234	12,858,698	6,649,441	6,209,257	4,052,783	3,767,806	284,977	3,341,048	3,297,180	43,868	711,735	470,626	241,109
2004	17,272,044	10,726,181	6,545,863	12,980,112	6,736,536	6,243,576	4,291,932	3,989,645	302,287	3,411,685	3,369,435	42,250	880,247	620,210	260,037

continued

2000	15,312,289	9,363,858	5,948,431	11,752,786	6,055,398	5,697,388	3,559,503	3,308,460	251,043	3,109,419	3,050,575	58,844	450,084	257,885	192,199
2001	15,927,987	9,677,408	6,250,579	12,233,156	6,236,455	5,996,701	3,694,831	3,440,953	253,878	3,167,330	3,119,781	47,549	527,501	321,172	206,329
2002	16,611,711	10,082,332	6,529,379	12,751,993	6,481,613	6,270,380	3,859,718	3,600,719	258,999	3,265,476	3,218,389	47,087	594,242	382,330	211,912
2003	16,911,461	10,417,247	6,494,234	12,858,698	6,649,441	6,209,257	4,052,783	3,767,806	284,977	3,341,048	3,297,180	43,868	711,735	470,626	241,109
2004	17,272,044	10,726,181	6,545,863	12,980,112	6,736,536	6,243,576	4,291,932	3,989,645	302,287	3,411,685	3,369,435	42,250	880,247	620,210	260,037
2005	17,487,475	10,999,420	6,488,055	13,021,834	6,837,605	6,184,229	4,465,641	4,161,815	303,826	3,454,692	3,411,170	43,522	1,010,949	750,645	260,304
2006	17,758,870	11,240,330	6,518,540	13,180,133	6,955,013	6,225,120	4,578,737	4,285,317	293,420	3,512,866	3,473,710	39,156	1,065,871	811,607	254,264
2007	18,248,128	11,630,198	6,617,930	13,490,780	7,166,661	6,324,119	4,757,348	4,463,537	293,811	3,571,150	3,537,664	33,486	1,186,198	925,873	280,325
2008	19,102,814	12,131,436	6,971,378	13,972,153	7,331,809	6,640,344	5,130,661	4,799,627	331,034	3,661,519	3,626,168	35,351	1,469,142	1,173,459	295,683
2009	20,427,711	12,906,305	7,521,406	14,810,642	7,709,197	7,101,445	5,617,069	5,197,108	419,961	3,765,083	3,730,316	34,767	1,851,986	1,466,792	385,194
2010	21,016,126	13,335,251	7,680,875	15,142,809	7,924,771	7,218,038	5,873,317	5,410,480	462,837	3,854,920	3,822,260	32,660	2,018,397	1,588,220	430,177
2011	20,994,113	13,494,131	7,499,982	15,110,196	8,047,729	7,062,467	5,883,917	5,446,402	437,515	3,927,186	3,887,322	39,864	1,956,731	1,559,080	397,651
2012	20,642,819	13,478,846	7,163,973	14,880,343	8,092,683	6,787,660	5,762,476	5,386,163	376,313	3,953,578	3,915,972	37,606	1,808,898	1,470,191	338,707

—Not available.

<sup>1</sup> Large increases are due to the addition of schools accredited by the Accrediting Commission of Career Schools and Colleges of Technology.

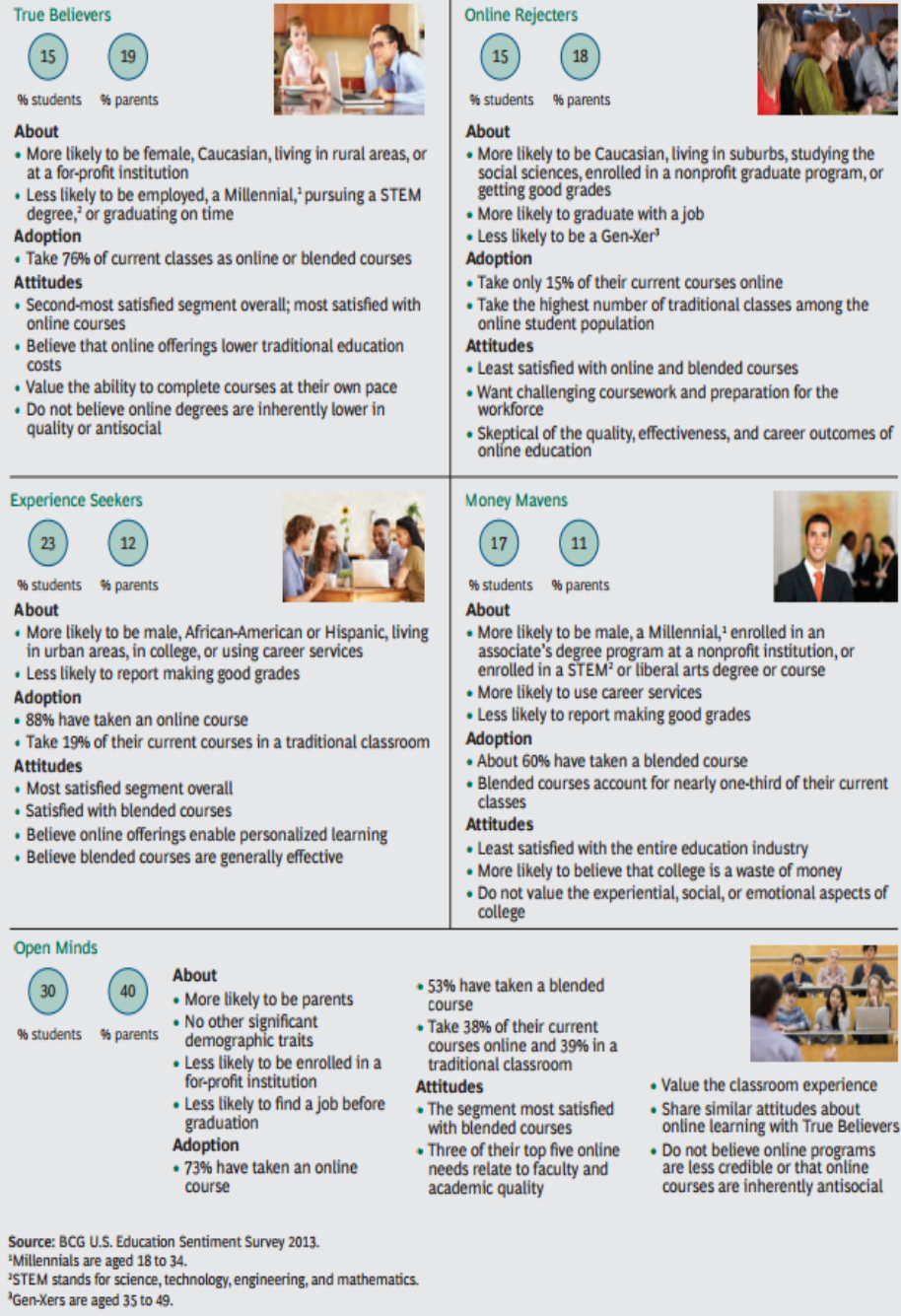
<sup>2</sup> Because of imputation techniques, data are not consistent with figures for other years.

NOTE: Data through 1995 are for institutions of higher education, while later data are for degree-granting institutions. Degree-granting institutions grant associate's or higher degrees and participate in Title IV federal financial aid programs. The degree-granting classification is very similar to the earlier higher education classification, but it includes more 2-year colleges and excludes a few higher education institutions that did not grant degrees.

U.S. Department of Education, National Center for Education Statistics, Higher Education General Information Survey (HEGIS), "Fall Enrollment in Institutions of Higher Education" surveys, 1970 through 1985; Integrated Postsecondary Education Data System (IPEDS), "Fall Enrollment Survey" (IPEDS-EF:86-99); and IPEDS Spring 2001 through Spring 2013, Enrollment component. (This table was prepared October 2013.).

## Appendix B

### EXHIBIT 1 | The Online Education Population Comprises Five Segments



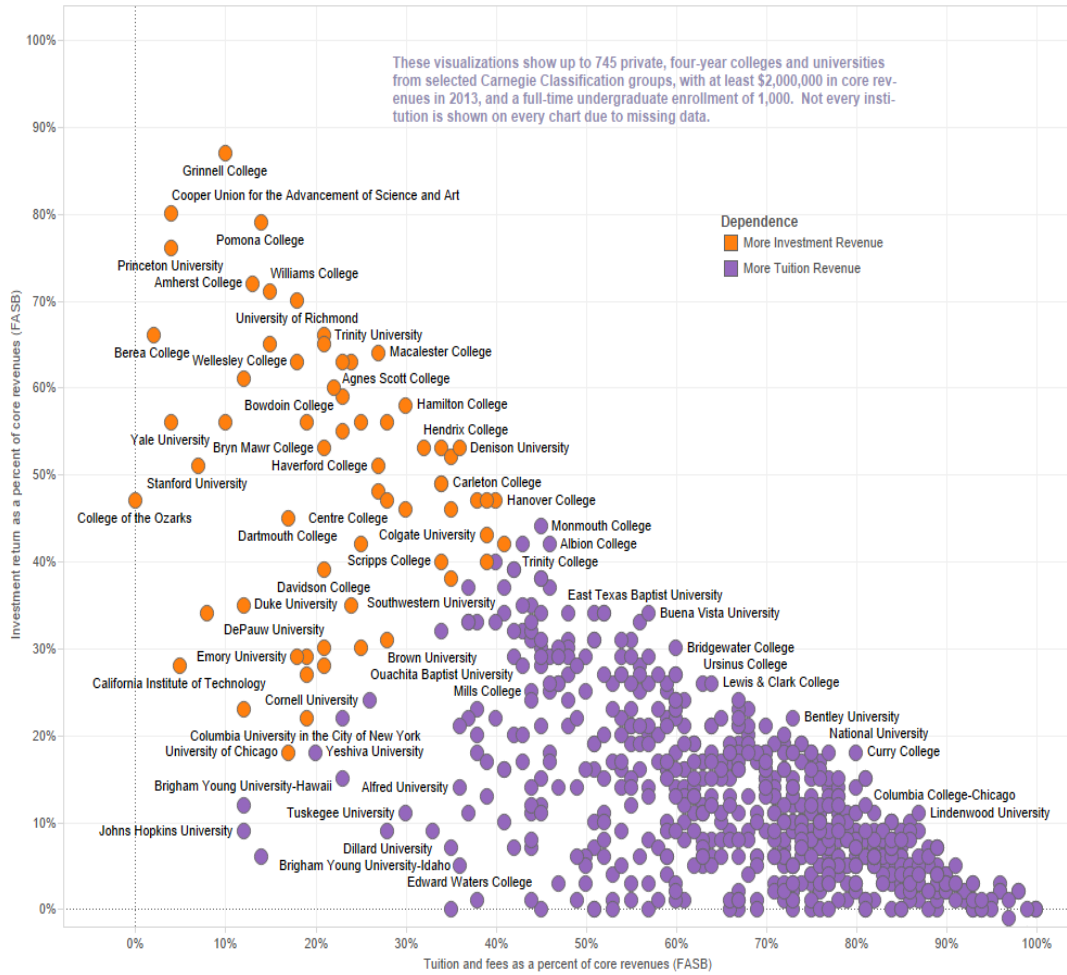
Allison Bailey, Christine Barton, and Katie Mullen, *The Five Faces of Online Education What Students and Parents Want* (The Boston Consulting Group, Inc., 2014), 7, PDF. Table used with permission of the authors.

## Appendix C

### Higher Education and Money

Colleges with more investment revenue than tuition are orange	These 75 institutions control 70% of all endowment funds	But enroll a much smaller fraction of full time undergraduates	Largest endowment growth at the least tuition dependent	Investment reliance = lower net price to low income students	But these colleges enroll fewer Pell students on average	Large portfolios appear to ta...
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#### Overview



All charts/tables provided in Appendices C and D are have been sourced directly with the permission from the creator from:

Jon Boeckenstedt, "Colleges or Investment Firms?," *Higher Ed Data Stories* (blog), entry posted January 28, 2015, accessed March 29, 2015, <http://highereddatastories.blogspot.com>.





## Appendix E

### Critical Design and Administrative Concerns in Developing an Online Program

1. Which student group (current, new, distant, campus, etc.) will be served by the online program?
2. Will the online program be organized differently than current program(s)? Will online programs run parallel to existing programs or be treated separately from each other?
3. Will the online program have a residential requirement?
4. How will instructional needs be addressed, such as by using existing faculty, hiring adjunct faculty, or using a mix of part-time and full-time faculty?
5. Should the program focus the design effort and funding on developing standardized course templates or provide training for existing faculty on the finer aspects of online pedagogy?
6. Should any type of common course template (i.e., a common “look and feel”) be used to streamline or standardize the online instruction?
7. How much interactivity should be designed into online courses, and how much of the interactivity should be left to the judgment of the individual faculty?
8. Should the program use commercial off-the-shelf online technology, use open-source technology, or develop its own proprietary teaching tools?
9. How should the program select a course management system that will best fit the goals and design of the curriculum to be placed online?
10. What role will corporate partners and university alliances play in the design and implementation of an online teaching program?

*Source:* Magjuka, R. J., M. Shi, and C. J. Bonk. “Critical Design and Administrative Issues in Online Education.” *Online Journal of Distance Learning Administration* 8, no. 4 (2005). Available at <http://www.westga.edu/~distance/ojdla/winter84/magjuka84.pdf> (accessed May 1, 2008).

## Appendix F

The A♦P♦L♦U-Sloan National Commission on Online Learning Benchmarking Study:  
List of Critical Administrative Concerns:

1. Online learning programs may work most effectively as a core component of institutional strategic planning and implementation.
2. Online learning initiatives benefit from ongoing institutional assessment and review due to their evolving and dynamic nature.
3. Online learning activities are strengthened by the centralization of some organizational structures and administrative functions that support and sustain the programs.
4. Online learning programs overseen by academic affairs units may be more readily accepted and may be more easily integrated into the fabric of the institution.
5. Online learning programs need reliable financing mechanisms for sustainability and growth.
6. Online learning programs succeed with consistent and adequate academic, administrative, and technological resources for faculty and students
7. Online learning programs have the capacity to change campus culture and become fully integrated if presidents, chancellors, chief academic officers, and other senior campus leaders are fully engaged in the delivery of “messages” that tie online education to fundamental institutional missions and priorities.

Sally A. McCarthy and Robert J. Samors, *Volume 1: A Resource for Campus Leaders, Online Learning as a Strategic Asset* (Washington, DC: Association of Public and Land-grant Universities, 2009), 5, accessed February 2, 2015, <http://www.aplu.org/document.doc?id=1877>.



## Appendix G<sup>2</sup>

**Table 1**

Administrative Support Matrix

Foundation Stage	Development Stage	Maintenance Stage
1. Administration's ability to listen and respond to faculty needs	1. Online program policies	1. Continuously evaluate new online technology
2. A supporting and responsive information technology (IT) team	2. Staff development program	2. Update technology only when new technology adds value
3. Effective and well-supported campus network	3. Faculty incentives	3. Periodically assess and update quality of course content
4. Effective server support	4. Teamwork approach	4. Set limits on intrusion of technology on online faculty personal time
5. Online student registration, billing, and payment system	5. Faculty development program	5. Survey faculty semiannually
6. Online bookstore services	6. Faculty mentoring program	6. Survey students at end of every semester
7. Online library services	7. Course management system	7. Make changes to programs based on faculty and student input
	8. Lecture capture or course online delivery system	
	9. Online test security	

Source: Meyer, J. D., and A. C. Barefield. *Developing and Sustaining Online Education: An Administrator's Guide to Developing an Online Teaching Program*. Cologne: LAP Academic Publishing, 2009.

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<sup>2</sup> Table used with the permission of the authors.

## Appendix H

**Table 315.10. Number of instructional faculty in degree-granting postsecondary institutions, by employment status, sex, control, and level of institution: Selected years, fall 1970 through fall 2011**

Year	Employment status				Sex			Control				Level		
	Total	Full-time	Part-time	Percent full-time	Males	Females	Per-cent female	Public	Private			4-year	2-year	
									Total	Non-profit	For-profit			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1970	474,000	369,000	104,000	77.8	—	—	—	314,000	160,000	—	—	—	382,000	92,000
1971 <sup>1</sup>	492,000	379,000	113,000	77.0	—	—	—	333,000	159,000	—	—	—	387,000	105,000
1972	500,000	380,000	120,000	76.0	—	—	—	343,000	157,000	—	—	—	384,000	116,000
1973 <sup>1</sup>	527,000	389,000	138,000	73.8	—	—	—	365,000	162,000	—	—	—	401,000	126,000
1974 <sup>1</sup>	567,000	406,000	161,000	71.6	—	—	—	397,000	170,000	—	—	—	427,000	140,000
1975 <sup>1</sup>	628,000	440,000	188,000	70.1	—	—	—	443,000	185,000	—	—	—	467,000	161,000
1976	633,000	434,000	199,000	68.6	—	—	—	449,000	184,000	—	—	—	467,000	166,000
1977	678,000	448,000	230,000	66.1	—	—	—	492,000	186,000	—	—	—	485,000	193,000
1979 <sup>1</sup>	675,000	445,000	230,000	65.9	—	—	—	488,000	187,000	—	—	—	494,000	182,000
1980 <sup>1</sup>	686,000	450,000	236,000	65.6	—	—	—	495,000	191,000	—	—	—	494,000	192,000
1981	705,000	461,000	244,000	65.4	—	—	—	509,000	196,000	—	—	—	493,000	212,000
1982 <sup>1</sup>	710,000	462,000	248,000	65.1	—	—	—	506,000	204,000	—	—	—	493,000	217,000
1983	724,000	471,000	254,000	65.1	—	—	—	512,000	212,000	—	—	—	504,000	220,000
1984 <sup>1</sup>	717,000	462,000	255,000	64.4	—	—	—	505,000	212,000	—	—	—	504,000	213,000
1985 <sup>1</sup>	715,000	459,000	256,000	64.2	—	—	—	503,000	212,000	—	—	—	504,000	211,000
1986 <sup>1</sup>	722,000	459,000	263,000	63.6	—	—	—	510,000	212,000	—	—	—	506,000	216,000
1987 <sup>2</sup>	793,070	523,420	269,650	66.0	529,413	263,657	33.2	552,749	240,321	—	—	—	547,505	245,565
1989 <sup>2</sup>	824,220	524,426	299,794	63.6	534,254	289,966	35.2	577,298	246,922	—	—	—	583,700	240,520
1991 <sup>2</sup>	826,252	535,623	290,629	64.8	525,599	300,653	36.4	580,908	245,344	236,066	9,278	591,269	234,983	
1993 <sup>2</sup>	915,474	545,706	369,768	59.6	561,123	354,351	38.7	650,434	265,040	254,130	10,910	625,969	289,505	
1995 <sup>2</sup>	931,706	550,822	380,884	59.1	562,893	368,813	39.6	656,833	274,873	260,900	13,973	647,059	284,647	
1997 <sup>2</sup>	989,813	568,719	421,094	57.5	587,420	402,393	40.7	694,560	295,253	271,257	23,996	682,650	307,163	
1999 <sup>2</sup>	1,027,830	590,937	436,893	57.5	602,469	425,361	41.4	713,325	314,505	284,652	29,853	713,823	314,007	
2001 <sup>2</sup>	1,113,183	617,868	495,315	55.5	644,514	468,669	42.1	771,124	342,059	306,487	35,572	764,172	349,011	
2003 <sup>2</sup>	1,173,593	630,092	543,501	53.7	663,723	509,870	43.4	791,766	381,827	330,097	51,730	814,289	359,304	
2005 <sup>2</sup>	1,290,426	675,624	614,802	52.4	714,453	575,973	44.6	841,188	449,238	361,523	87,715	916,996	373,430	
2007 <sup>2</sup>	1,371,390	703,463	667,927	51.3	743,812	627,578	45.8	877,146	494,244	385,875	108,369	990,849	380,541	
2009 <sup>2</sup>	1,439,144	728,977	710,167	50.7	761,035	678,109	47.1	913,679	525,465	408,561	116,904	1,038,483	400,661	
2011 <sup>2</sup>	1,523,615	761,619	761,996	50.0	789,197	734,418	48.2	953,230	570,385	432,733	137,652	1,115,627	407,988	

—Not available.

<sup>1</sup> Estimated on the basis of enrollment. For methodological details on estimates, see National Center for Education Statistics, *Projections of Education Statistics to 2000*.

<sup>2</sup> Because of revised survey methods, data are not directly comparable with figures for years prior to 1987.

NOTE: Includes faculty members with the title of professor, associate professor, assistant professor, instructor, lecturer, assisting professor, adjunct professor, or interim professor (or the equivalent). Excluded are graduate students with titles such as graduate or teaching fellow who assist senior faculty. Data through 1995 are for institutions of higher education, while later data are for degree-granting institutions. Degree-granting institutions grant associate's or higher degrees and participate in Title IV federal financial aid programs. The degree-granting classification is very similar to the earlier higher education classification, but it includes more 2-year colleges and excludes a few higher education institutions that did not grant degrees. Beginning in 2007, includes institutions with fewer than 15 full-time employees; these institutions did not report staff data prior to 2007. Detail may not sum to totals because of rounding.

continued

Table 316.10. Average salary of full-time instructional faculty on 9-month contracts in degree-granting postsecondary institutions, by academic rank, control and level of institution, and sex: Selected years, 1970-71 through 2012-13

Sex and academic year	Academic rank							Public institutions			Private institutions		
	All faculty	Professor	Associate professor	Assistant professor	Instructor	Lecturer	No rank	Total	4-year	2-year	Total	4-year	2-year
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Current dollars													
<b>Total</b>													
1970-71	\$12,710	\$17,958	\$13,563	\$11,176	\$9,360	\$11,196	\$12,333	\$12,953	\$13,121	\$12,644	\$11,619	\$11,824	\$8,664
1975-76	16,659	22,649	17,065	13,986	13,672	12,906	15,196	16,942	17,400	15,820	15,921	16,116	10,901
1980-81	23,302	30,753	23,214	18,901	15,178	17,301	22,334	23,745	24,373	22,177	22,093	22,325	15,065
1982-83	27,196	35,540	26,921	22,056	17,601	20,072	25,557	27,488	28,293	25,567	26,393	26,691	16,595
1984-85	30,447	39,743	29,945	24,668	20,230	22,334	27,683	30,646	31,764	27,864	29,910	30,247	18,510
1985-86	32,392	42,268	31,787	26,277	20,918	23,770	29,088	32,750	34,033	29,590	31,402	31,732	19,436
1987-88	35,897	47,040	35,231	29,110	22,728	25,977	31,532	36,231	37,840	32,209	35,049	35,246	21,867
1989-90	40,133	52,810	39,392	32,689	25,030	28,990	34,559	40,416	42,365	35,516	39,464	39,817	24,601
1990-91	42,165	55,540	41,414	34,434	26,332	30,097	36,395	42,317	44,510	37,055	41,788	42,224	24,088
1991-92	43,851	57,433	42,929	35,745	30,916	30,456	37,783	43,641	45,638	38,959	44,376	44,793	25,673
1992-93	44,714	58,788	43,945	36,625	28,499	30,543	37,771	44,197	46,515	38,935	45,985	46,427	26,105
1993-94	46,364	60,649	45,278	37,630	28,828	32,729	40,584	45,920	48,019	41,040	47,465	47,880	28,435
1994-95	47,811	62,709	46,713	38,756	29,665	33,198	41,227	47,432	49,738	42,101	48,741	49,379	25,613
1995-96	49,309	64,540	47,966	39,696	30,344	34,136	42,996	48,837	51,172	43,295	50,466	50,819	31,915
1996-97	50,829	66,659	49,307	40,687	31,193	34,962	44,200	50,303	52,718	44,584	52,112	52,443	32,628
1997-98	52,335	68,731	50,828	41,830	32,449	35,484	45,268	51,638	54,114	45,919	54,039	54,379	33,592
1998-99	54,097	71,322	52,576	43,348	33,819	36,819	46,250	53,319	55,948	47,285	55,981	56,284	34,821
1999-2000	55,888	74,410	54,524	44,978	34,918	38,194	47,389	55,011	57,950	48,240	58,013	58,323	35,925
2001-02	59,742	80,792	58,724	48,796	46,959	41,798	46,569	58,524	62,013	50,837	62,818	63,088	33,139
2002-03	61,330	83,466	60,471	50,552	48,304	42,622	46,338	60,014	63,486	52,330	64,533	64,814	34,826
2003-04	62,579	85,333	61,746	51,798	49,065	43,648	47,725	60,874	64,340	53,076	66,666	66,932	36,322
2004-05	64,234	88,158	63,558	53,308	49,730	44,514	48,942	62,346	66,053	53,932	68,755	68,995	37,329
2005-06	66,172	91,208	65,714	55,106	50,883	45,896	50,425	64,158	67,951	55,405	71,016	71,263	38,549
2006-07	68,585	94,870	68,153	57,143	53,278	47,478	52,161	66,566	70,460	57,466	73,419	73,636	41,138
2007-08	71,085	98,548	70,826	59,294	55,325	49,392	54,405	68,981	72,857	59,646	76,133	76,341	43,402
2008-09	73,570	102,346	73,439	61,550	56,918	51,188	56,370	71,237	75,245	61,433	79,147	79,410	43,542
2009-10	74,625	103,684	74,126	62,246	57,797	52,177	56,807	72,183	76,153	62,265	80,385	80,603	44,748
2010-11	75,472	104,957	75,103	63,140	57,943	52,549	56,549	72,704	76,861	62,301	81,892	82,094	45,146
2011-12	76,570	107,091	76,175	64,009	58,349	53,361	56,922	73,503	77,843	62,568	83,534	83,695	47,805
2012-13	77,301	108,310	77,089	64,632	57,495	53,394	58,254	73,909	78,111	62,781	85,000	85,167	44,978
<b>Males</b>													
1975-76	17,414	22,902	17,209	14,174	14,430	13,579	15,761	17,661	18,121	16,339	16,784	16,946	11,378
1980-81	24,499	31,082	23,451	19,227	15,545	18,281	23,170	24,873	25,509	22,965	23,493	23,669	16,075
1982-83	28,664	35,956	27,262	22,586	18,160	21,225	26,541	28,851	29,661	26,524	28,159	28,380	17,346
1984-85	32,182	40,269	30,392	25,330	21,159	23,557	28,670	32,240	33,344	28,891	32,028	32,278	19,460
1985-86	34,294	42,833	32,273	27,094	21,693	25,238	30,267	34,528	35,786	30,758	33,656	33,900	20,412
1987-88	38,112	47,735	35,823	30,086	23,645	27,652	32,747	38,314	39,898	33,477	37,603	37,817	22,641
1989-90	42,763	53,650	40,131	33,781	25,933	31,162	35,980	42,959	44,834	37,081	42,312	42,595	25,218
1990-91	45,065	56,549	42,239	35,636	27,388	32,398	38,036	45,084	47,168	38,787	45,019	45,319	25,937
1991-92	46,848	58,494	43,814	36,969	33,359	32,843	39,422	46,483	48,401	40,811	47,733	48,042	26,825

continued

1992-93	47,866	59,972	44,855	37,842	29,583	32,512	39,365	47,175	49,392	40,725	49,518	49,837	27,402
1993-94	49,579	61,857	46,229	38,794	29,815	34,796	42,251	48,956	50,989	42,938	51,076	51,397	30,783
1994-95	51,228	64,046	47,705	39,923	30,528	35,082	43,103	50,629	52,874	44,020	52,653	53,036	29,639
1995-96	52,814	65,949	49,037	40,858	30,940	36,135	44,624	52,163	54,448	45,209	54,364	54,649	33,301
1996-97	54,465	68,214	50,457	41,864	31,738	36,932	45,688	53,737	56,162	46,393	56,185	56,453	34,736
1997-98	56,115	70,468	52,041	43,017	33,070	37,481	46,822	55,191	57,744	47,690	58,293	58,576	36,157
1998-99	58,048	73,260	53,830	44,650	34,741	38,976	47,610	57,038	59,805	48,961	60,392	60,641	38,040
1999-2000	60,084	76,478	55,939	46,414	35,854	40,202	48,788	58,984	62,030	50,033	62,631	62,905	38,636
2001-02	64,320	83,356	60,300	50,518	48,844	44,519	48,049	62,835	66,577	52,360	67,871	68,100	33,395
2002-03	66,126	86,191	62,226	52,441	50,272	45,469	47,412	64,564	68,322	53,962	69,726	69,976	34,291
2003-04	67,485	88,262	63,466	53,649	50,985	46,214	48,973	65,476	69,248	54,623	72,021	72,250	35,604
2004-05	69,337	91,290	65,394	55,215	51,380	46,929	50,102	67,130	71,145	55,398	74,318	74,540	34,970
2005-06	71,569	94,733	67,654	57,099	52,519	48,256	51,811	69,191	73,353	56,858	76,941	77,143	38,215
2006-07	74,167	98,563	70,168	59,150	55,061	49,641	53,665	71,797	76,072	58,971	79,491	79,663	41,196
2007-08	76,935	102,555	72,940	61,368	57,116	51,804	56,196	74,389	78,673	61,166	82,681	82,850	42,995
2008-09	79,706	106,759	75,634	63,726	58,819	53,777	58,341	76,897	81,394	62,870	86,008	86,205	43,871
2009-10	80,885	108,227	76,401	64,450	59,799	54,946	58,649	77,951	82,428	63,698	87,386	87,549	44,500
2010-11	81,868	109,656	77,423	65,392	59,792	55,435	58,392	78,603	83,288	63,683	88,996	89,155	44,542
2011-12	83,154	112,068	78,559	66,300	60,064	56,363	58,833	79,550	84,443	63,932	90,838	90,974	45,250
2012-13	84,026	113,595	79,508	66,937	59,161	56,190	60,386	80,072	84,822	64,152	92,485	92,632	42,906
<b>Females</b>													
1975-76	14,308	20,308	16,364	13,522	12,572	11,901	14,094	14,762	14,758	14,769	13,030	13,231	10,201
1980-81	19,996	27,959	22,295	18,302	14,854	16,168	20,843	20,673	20,608	20,778	18,073	18,326	13,892
1982-83	23,261	32,221	25,738	21,130	17,102	18,830	23,855	23,892	23,876	23,917	21,451	21,785	15,845
1984-85	25,941	35,824	28,517	23,575	19,362	21,004	26,050	26,566	26,813	26,172	24,186	24,560	17,575
1985-86	27,576	38,252	30,300	24,966	20,237	22,273	27,171	28,299	28,680	27,693	25,523	25,889	18,504
1987-88	30,499	42,371	33,528	27,600	21,962	24,370	29,605	31,215	31,820	30,228	28,621	28,946	21,215
1989-90	34,183	47,663	37,469	31,090	24,320	26,995	32,528	34,796	35,704	33,307	32,650	33,010	24,002
1990-91	35,881	49,728	39,329	32,724	25,534	28,111	34,179	36,459	37,573	34,720	34,359	34,898	22,585
1991-92	37,534	51,621	40,766	34,063	28,873	28,550	35,622	37,800	38,634	36,517	36,828	37,309	24,683
1992-93	38,385	52,755	41,861	35,032	27,700	28,922	35,792	38,356	39,470	36,710	38,460	38,987	25,068
1993-94	40,058	54,746	43,178	36,169	28,136	31,048	38,474	40,118	41,031	38,707	39,902	40,378	26,142
1994-95	41,369	56,555	44,626	37,352	29,072	31,677	38,967	41,548	42,663	39,812	40,908	41,815	22,851
1995-96	42,871	58,318	45,803	38,345	29,940	32,584	41,085	42,871	43,986	41,086	42,871	43,236	30,671
1996-97	44,325	60,160	47,101	39,350	30,819	33,415	42,474	44,306	45,402	42,531	44,374	44,726	30,661
1997-98	45,775	61,965	48,597	40,504	32,011	33,918	43,491	45,648	46,709	43,943	46,106	46,466	30,995
1998-99	47,421	64,236	50,347	41,894	33,152	35,115	44,723	47,247	48,355	45,457	47,874	48,204	31,524
1999-2000	48,997	67,079	52,091	43,367	34,228	36,607	45,865	48,714	50,168	46,340	49,737	50,052	32,951
2001-02	52,662	72,542	56,186	46,824	45,262	39,538	45,003	52,123	53,895	49,290	54,149	54,434	32,921
2002-03	54,105	75,028	57,716	48,380	46,573	40,265	45,251	53,435	55,121	50,717	55,881	56,158	35,296
2003-04	55,378	76,652	59,095	49,689	47,404	41,536	46,519	54,408	56,117	51,591	57,921	58,192	36,896
2004-05	56,926	79,160	60,809	51,154	48,351	42,455	47,860	55,780	57,714	52,566	59,919	60,143	39,291
2005-06	58,665	81,514	62,860	52,901	49,533	43,934	49,172	57,462	59,437	54,082	61,830	62,092	38,786
2006-07	61,016	85,090	65,237	54,974	51,832	45,693	50,812	59,781	61,875	56,127	64,246	64,481	41,099
2007-08	63,347	88,301	67,816	57,111	53,889	47,407	52,837	62,129	64,226	58,318	66,528	66,745	43,670
2008-09	65,638	91,522	70,375	59,286	55,424	49,078	54,649	64,231	66,393	60,195	69,300	69,593	43,344
2009-10	66,653	92,835	71,019	60,001	56,246	49,945	55,211	65,144	67,283	61,047	70,516	70,756	44,892
2010-11	67,461	94,032	72,001	60,893	56,506	50,227	54,985	65,615	67,937	61,138	72,088	72,302	45,518

continued

2011-12	68,470	95,840	73,053	61,761	57,013	51,001	55,319	66,375	68,897	61,433	73,617	73,776	49,382
2012-13	69,114	96,680	73,991	62,382	56,188	51,200	56,461	66,706	69,150	61,652	75,002	75,166	46,407
	Constant 2012-13 dollars <sup>1</sup>												
<b>Total</b>													
1970-71	74,019	104,582	78,991	65,087	54,509	65,204	71,827	75,438	76,417	73,637	67,664	68,863	50,458
1975-76	69,494	94,485	71,190	58,345	57,037	53,839	63,392	70,676	72,587	65,994	66,416	67,232	45,474
1980-81	62,233	82,133	61,998	50,479	40,536	46,206	59,648	63,416	65,094	59,229	59,004	59,624	40,235
1982-83	64,104	83,772	63,456	51,989	41,488	47,312	60,241	64,793	66,690	60,265	62,212	62,914	39,117
1984-85	66,599	86,933	65,501	53,958	44,251	48,853	60,553	67,034	69,480	60,949	65,424	66,162	40,488
1985-86	68,867	89,865	67,581	55,867	44,473	50,537	61,843	69,629	72,356	62,910	66,763	67,464	41,322
1987-88	71,691	93,945	70,361	58,137	45,390	51,879	62,974	72,358	75,572	64,326	69,998	70,591	43,671
1989-90	73,123	96,221	71,774	59,560	45,605	52,821	62,967	73,639	77,190	64,712	71,904	72,548	44,824
1990-91	72,844	95,950	71,545	59,488	45,490	51,996	62,875	73,107	76,894	64,015	72,192	72,946	41,614
1991-92	73,405	96,139	71,860	59,836	51,751	50,981	63,247	73,053	76,395	65,216	74,282	74,980	42,975
1992-93	72,581	95,426	71,333	59,451	46,261	49,578	61,311	71,742	75,505	63,201	74,644	75,362	42,375
1993-94	73,360	95,962	71,640	59,540	45,613	51,785	64,214	72,657	75,978	64,935	75,102	75,758	44,991
1994-95	73,542	96,456	71,853	59,613	45,629	51,064	63,414	72,958	76,505	64,758	74,971	75,953	39,396
1995-96	73,837	96,644	71,825	59,442	45,439	51,116	64,383	73,130	76,627	64,831	75,569	76,098	47,790
1996-97	74,002	97,048	71,786	59,235	45,414	50,900	64,351	73,235	76,751	64,909	75,869	76,351	47,503
1997-98	74,859	98,312	72,703	59,832	46,414	50,756	64,750	73,861	77,404	65,682	77,297	77,783	48,049
1998-99	76,062	100,282	73,923	60,949	47,550	51,768	65,030	74,969	78,664	66,484	78,712	79,137	46,959
1999-2000	76,376	101,688	74,511	61,467	47,718	52,195	64,761	75,178	79,193	65,925	79,280	79,703	49,094
2001-02	77,564	104,895	76,243	63,353	60,968	54,268	60,462	75,983	80,513	66,003	81,558	81,910	43,025
2002-03	77,914	106,037	76,822	64,222	61,366	54,148	58,869	76,243	80,653	66,481	81,984	82,341	44,243
2003-04	77,799	106,088	76,763	64,396	60,998	54,264	59,333	75,679	79,989	65,985	82,880	83,210	45,155
2004-05	77,524	106,398	76,708	64,337	60,019	53,724	59,068	75,244	79,719	65,090	82,980	83,270	45,052
2005-06	76,933	106,040	76,400	64,067	59,157	53,360	58,625	74,592	79,001	64,415	82,565	82,852	44,817
2006-07	77,728	107,517	77,238	64,760	60,380	53,808	59,115	75,440	79,853	65,127	83,207	83,453	46,623
2007-08	77,683	107,695	77,400	64,798	60,461	53,976	59,454	75,384	79,619	65,182	83,199	83,427	47,431
2008-09	79,292	110,306	79,150	66,337	61,344	55,169	60,754	76,777	81,097	66,211	85,302	85,585	46,928
2009-10	79,658	110,677	79,125	66,444	61,695	55,696	60,638	77,051	81,289	66,464	85,806	86,039	47,766
2010-11	78,976	109,830	78,590	66,071	60,633	54,989	59,175	76,079	80,430	65,193	85,695	85,905	47,242
2011-12	77,845	108,873	77,443	65,074	59,320	54,249	57,870	74,726	79,138	63,610	84,925	85,088	48,601
2012-13	77,301	108,310	77,089	64,632	57,495	53,394	58,254	73,909	78,111	62,781	85,000	85,167	44,978
<b>Males</b>													
1975-76	72,644	95,539	71,788	59,130	60,196	56,647	65,749	73,677	75,593	68,163	70,018	70,692	47,464
1980-81	65,430	83,012	62,631	51,350	41,517	48,824	61,881	66,429	68,128	61,333	62,743	63,214	42,932
1982-83	67,565	84,753	64,260	53,238	42,805	50,030	62,561	68,005	69,915	62,520	66,374	66,895	40,887
1984-85	70,394	88,083	66,479	55,406	46,283	51,528	62,712	70,521	72,936	63,195	70,057	70,604	42,566
1985-86	72,911	91,066	68,614	57,604	46,121	53,658	64,350	73,409	76,083	65,394	71,555	72,074	43,397
1987-88	76,114	95,332	71,543	60,087	47,222	55,225	65,400	76,518	79,682	66,858	75,098	75,526	45,217
1989-90	77,916	97,752	73,119	61,550	47,250	56,777	65,556	78,272	81,689	67,563	77,095	77,608	45,949
1990-91	77,854	97,693	72,970	61,563	47,316	55,970	65,710	77,887	81,486	67,008	77,774	78,293	44,808
1991-92	78,421	97,915	73,342	61,883	55,841	54,978	65,990	77,810	81,020	68,316	79,902	80,419	44,903
1992-93	77,697	97,349	72,811	61,426	48,020	52,775	63,899	76,576	80,176	66,106	80,380	80,898	44,479
1993-94	78,446	97,873	73,146	61,381	47,175	55,055	66,851	77,460	80,677	67,938	80,815	81,323	48,707
1994-95	78,797	98,514	73,378	61,408	46,957	53,962	66,300	77,876	81,328	67,710	80,989	81,578	45,590
1995-96	79,085	98,754	73,430	61,181	46,331	54,110	66,822	78,110	81,532	67,697	81,406	81,833	49,866
1996-97	79,294	99,312	73,459	60,950	46,207	53,768	66,517	78,235	81,765	67,542	81,799	82,189	50,571

continued

1997-98	80,266	100,796	74,438	61,530	47,303	53,612	66,973	78,944	82,596	68,215	83,381	83,787	51,718
1998-99	81,618	103,007	75,686	62,779	48,847	54,801	66,942	80,198	84,089	68,841	84,913	85,263	53,486
1999-2000	82,110	104,513	76,445	63,428	48,998	54,939	66,673	80,606	84,769	68,375	85,591	85,965	52,799
2001-02	83,509	108,223	78,289	65,589	63,415	57,801	62,384	81,580	86,439	67,981	88,119	88,416	43,357
2002-03	84,008	109,498	79,052	66,621	63,866	57,764	60,233	82,023	86,797	68,554	88,580	88,898	43,563
2003-04	83,898	109,728	78,902	66,697	63,385	57,453	60,884	81,400	86,090	67,908	89,538	89,822	44,264
2004-05	83,683	110,177	78,923	66,639	62,010	56,639	60,468	81,019	85,865	66,860	89,694	89,962	42,205
2005-06	83,208	110,139	78,655	66,384	61,060	56,104	60,236	80,443	85,282	66,104	89,453	89,688	44,430
2006-07	84,054	111,702	79,522	67,036	62,402	56,259	60,819	81,369	86,213	66,833	90,088	90,283	46,688
2007-08	84,076	112,074	79,710	67,065	62,418	56,612	61,412	81,294	85,976	66,843	90,356	90,540	46,986
2008-09	85,904	115,062	81,516	68,682	63,393	57,959	62,878	82,877	87,724	67,759	92,696	92,910	47,282
2009-10	86,340	115,526	81,554	68,797	63,832	58,652	62,604	83,208	87,994	67,994	93,279	93,454	47,501
2010-11	85,669	114,747	81,018	68,428	62,569	58,009	61,103	82,252	87,155	66,640	93,128	93,295	46,610
2011-12	84,537	113,933	79,866	67,404	61,063	57,301	59,812	80,874	85,849	64,996	92,350	92,488	46,003
2012-13	84,026	113,595	79,508	66,937	59,161	56,190	60,386	80,072	84,822	64,152	92,485	92,632	42,906
<b>Females</b>													
1975-76	59,686	84,718	68,264	56,409	52,445	49,645	58,795	61,584	61,567	61,610	54,359	55,194	42,553
1980-81	53,404	74,671	59,544	48,880	39,671	43,180	55,666	55,212	55,038	55,492	48,268	48,944	37,102
1982-83	54,829	75,949	60,668	49,806	40,312	44,385	56,229	56,316	56,279	56,375	50,563	51,350	37,349
1984-85	56,743	78,360	62,377	51,567	42,352	45,944	56,981	58,110	58,650	57,248	52,904	53,722	38,443
1985-86	58,628	81,326	64,420	53,079	43,025	47,354	57,767	60,166	60,976	58,877	54,264	55,042	39,341
1987-88	60,911	84,621	66,960	55,121	43,861	48,670	59,125	62,341	63,549	60,369	57,160	57,809	42,369
1989-90	62,282	86,843	68,269	56,646	44,311	49,186	59,267	63,400	65,054	60,686	59,488	60,145	43,732
1990-91	61,986	85,910	67,945	56,534	44,112	48,565	59,046	62,986	64,911	59,982	59,357	60,289	39,018
1991-92	62,829	86,410	68,240	57,019	48,332	47,790	59,630	63,275	64,671	61,128	61,648	62,453	41,318
1992-93	62,307	85,635	67,950	56,866	44,964	46,948	58,099	62,260	64,069	59,590	62,430	63,285	40,691
1993-94	63,383	86,622	68,318	57,228	44,518	49,126	60,875	63,476	64,921	61,244	63,136	63,888	41,363
1994-95	63,633	86,990	68,642	57,453	44,718	48,724	59,937	63,907	65,622	61,237	62,923	64,318	35,149
1995-96	64,196	87,326	68,587	57,419	44,833	48,792	61,522	64,196	65,865	61,524	64,196	64,743	45,928
1996-97	64,532	87,586	68,574	57,289	44,869	48,649	61,838	64,504	66,100	61,920	64,603	65,116	44,639
1997-98	65,475	88,633	69,513	57,936	45,788	48,516	62,208	65,294	66,811	62,855	65,949	66,464	44,335
1998-99	66,675	90,318	70,790	58,904	46,613	49,373	62,882	66,431	67,988	63,914	67,313	67,777	44,324
1999-2000	66,958	91,669	71,186	59,265	46,775	50,027	62,678	66,572	68,559	63,328	67,970	68,401	45,030
2001-02	68,372	94,183	72,948	60,793	58,765	51,333	58,428	67,673	69,974	63,994	70,303	70,674	42,742
2002-03	68,735	95,316	73,324	61,462	59,167	51,153	57,487	67,885	70,026	64,432	70,992	71,344	44,841
2003-04	68,846	95,295	73,468	61,775	58,933	51,638	57,833	67,641	69,766	64,139	72,009	72,345	45,870
2004-05	68,704	95,538	73,390	61,738	58,354	51,239	57,762	67,321	69,655	63,442	72,316	72,586	47,420
2005-06	68,205	94,769	73,082	61,504	57,589	51,079	57,169	66,807	69,102	62,877	71,885	72,190	45,094
2006-07	69,150	96,434	73,934	62,303	58,742	51,785	57,586	67,751	70,124	63,609	72,811	73,077	46,579
2007-08	69,227	96,497	74,111	62,412	58,891	51,807	57,742	67,896	70,187	63,731	72,703	72,941	47,724
2008-09	70,743	98,639	75,848	63,897	59,734	52,895	58,899	69,226	71,556	64,877	74,690	75,005	46,714
2009-10	71,148	99,096	75,808	64,047	60,040	53,313	58,935	69,537	71,821	65,164	75,272	75,527	47,919
2010-11	70,593	98,398	75,344	63,721	59,130	52,559	57,538	68,662	71,092	63,976	75,435	75,659	47,632
2011-12	69,609	97,435	74,269	62,789	57,962	51,850	56,240	67,480	70,043	62,456	74,842	75,004	50,204
2012-13	69,114	96,680	73,991	62,382	56,188	51,200	56,461	66,706	69,150	61,652	75,002	75,166	46,407

<sup>1</sup> Constant dollars based on the Consumer Price Index, prepared by the Bureau of Labor Statistics, U.S. Department of Labor, adjusted to an academic-year basis.  
NOTE: Data through 1995-96 are for institutions of higher education, while later data are for degree-granting institutions. Degree-granting institutions grant associate's or higher degrees and participate in Title IV federal financial aid programs. Data for 1987-88 and later years include imputations for nonrespondent institutions.

U.S. Department of Education, National Center for Education Statistics, Higher Education General Information Survey (HEGIS), "Faculty Salaries, Tenure, and Fringe Benefits" surveys, 1970-71 through 1985-86; Integrated Postsecondary Education Data System (IPEDS), "Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty Survey" (IPEDS-SA:87-99); and IPEDS Winter 2001-02 through Winter 2011-12 and Spring 2013, Human Resources component, Salaries section. (This table was prepared March 2014.)

### Appendix I<sup>3</sup>

## *Online Teaching Infrastructure Matrix Description*

<b>Foundation Stage:</b> Defines the infrastructure and procedural groundwork that should be in place before beginning an online teaching program		
Factor	Description	Source(s)
1. Administration in tune with faculty needs	Far too often administration may take action based on outside recommendations or market influences without first taking time to determine faculty needs and concerns. In an undertaking of this magnitude, it is important that administration develop a teamwork atmosphere with faculty in order to secure buy-in and the full understanding and cooperation of the faculty	McLean, 2006
2. Information Technology (IT) department with a customer oriented support role	In order to create an effective and harmonious work environment for faculty who teach online, technology support personnel must learn to be extremely supportive and responsive to immediate needs of the faculty. Little is more frustrating to faculty who teach online than the breakdown of equipment or slow responsiveness of technical support. These issues need to be addressed at the highest levels to ensure the IT department is ready to support the additional demand that will result from the implementation of an online program	Frith & Kee, 2003 Jennings & Bayless, 2003
3. Effective and well supported campus network	It should be obvious that online teaching program success is going to rely heavily on the network infrastructure and campus servers to provide the needed connectivity to online students. These functions should be up and running 100% of the time in order to adequately support an online teaching program	Frith & Kee, 2003
4. Effective Server Support		
5. Online Student Registration, Billing and Payment System	Support and services for students who will enroll online must be in place before an online teaching program can be developed. These services are essential parts of the basic foundation needed to support an online teaching program. If these services are not established well in advance of implementation, online students will have difficulty with registration, counseling advice, purchase of required books, and performing research	Tallen-Runnels et al., 2006
6. Online Bookstore Services		
7. Online Library Services		

continued

<sup>3</sup> Table used with the permission of the authors.

**Development Stage:** Designed to identify the processes and elements that are essential during the development of an effective online teaching program

Factor	Description	Source(s)
1. Online Program Policies	It is important to establish policies before or very early in the development process so that a guide to follow exists. These policies should address issues such as methods to be used in the development process; how the program will be administered; what groups or individuals will handle various aspects; how training will be conducted; what, if any, faculty incentives will be implemented; what hardware and software will be used and how technology will be configured; how the curriculum will be developed and placed in the online format; and finally, how the program will be funded	Compora, 2003
2. Staff Development Program	Staff and faculty development is essential to the strength and effectiveness of any online program. The expense of proper training pales in comparison to losses of time and energy that result from staff and faculty who lack proper training. Several studies show that it is even better if faculty development classes can be offered online, so faculty can get a better feel for what their students will experience. A healthy online training program must be preceded by a healthy development program for both faculty and staff	McQuiggan, 2007
3. Faculty Incentives	Incentives are often expected or are offered to faculty as an enticement to work in an online program. The reason incentives are often expected or required is that online teaching is more of a strain than normal classroom teaching. Without proper control of time spent online, longer work hours and a higher workload may easily result with an online teaching program. Since students are likely to be studying in the online environment at anytime 24/7, there is often a tendency for students to also want access to the professor 24/7	Dahl, 2003; McKenzie, et al., 2004
4. Teamwork Approach	A well honed <i>Teamwork Approach</i> to the online teaching process can often be enough incentive in itself. If faculty and staff feel they are part of an effective well-organized team, they will often find satisfaction in that fact alone	Dahl, 2003; McKenzie, et al., 2004
5. Faculty Development Program	See #2 above	





6. Faculty Mentoring Program	Faculty mentoring has been lauded as one of the more effective methods of helping faculty retain and apply training session information. Training that takes place without mentoring is quickly forgotten and refresher training is required, but training that is followed by a well organized mentoring program has proven very effective in helping faculty remember what was discussed in the classroom. Mentoring can also be a form of encouragement to faculty who might otherwise not implement certain technology at their disposal	Helton & Helton, 2005; Mandemach, Donnelli, Dailey, & Schulte, 2005
7. Course Management System	Selection of the proper <i>Course Management System (CMS)</i> is critical to the development of an online teaching program. Some of the more common include WebCT®, Blackboard®, eCollege®, Desire2Learn®, ANGEL®, and Moodle™. Each CMS has unique features that may or may not be useful or user-friendly for a given institution. This is why it is critical to evaluate several systems before launching an online teaching program to ensure your institution is getting a product that will adequately meet the needs of the faculty and the students	Ruiz et al., 2006
8. Lecture capture or course online delivery system	This line of online teaching products includes Tegrity™, Impatica®, Camtasia®, Elluminate®, or Wimba®. The author calls these Course Delivery Systems because each of these products has a unique way of managing multimedia for online delivery of course lectures or lessons either synchronously or asynchronously. Most of these products are software-based and can work with or augment the capabilities of a CMS to provide better student comprehension of online course content. The careful selection of these products is also very important to the overall quality of an online teaching program	Kosak et al., 2004; Ryan, et al., 2005
9. Online test security	Faculty are often, and rightfully, concerned about online test security. How can tests be proctored or students be monitored while taking a test online and at a distance? The answer in many cases is, you can't, but online tests can be designed so that minimal time is given to complete the test in order to restrict a student's ability to find answers they do not already know. Software is available that will restrict a student's ability to exit the testing software until test completion, but at times this can be cumbersome and difficult to use. This issue is an important consideration in the development of an online teaching program and policies should be developed early to prevent future problems	Tallen-Runnels et al., 2006

**Maintenance Stage:** Designed to keep a well-developed online teaching program going strong, and to map out changes, updates and improvements that may be needed along the way

Factor	Description	Source(s)
1. Continuously evaluate new online technology	This process ensures the online teaching program is managed and supported by the best and most up-to-date technology available	Ryan et al., 2005
2. Update technology only when value added	This is closely related to #1 in that decisions to upgrade technology should only be made when it can be proven that there will be value added with the updated technology. Many times technology is updated just because it is the latest and greatest, with no evaluation of the need for the upgrade	Ryan et al., 2005
3. Periodically assess and update quality of course content	This process is much more critical in an online environment than with campus courses because technology and online student demands change much more rapidly. Maintaining accreditation is often another factor that requires constant monitoring and updating of online course materials. Many institutions evaluate their online curricula and update it each semester	Cook & Dupras, 2007; Tallen-Runnels et al., 2006
4. Set limits on online faculty personal time intrusion	This factor is often overlooked by administrators who are not familiar with the stresses and demands of an online teaching program. Without constraints, faculty could very easily become overwhelmed from the 24/7 demands on their time. Policies should be carefully designed to take this factor into account, and build in faculty release time and downtime to recuperate and regenerate. Poor management in this area can result in the loss of valuable faculty members at a very high cost to the institution	McLean, 2006
5. Survey faculty semiannually	These factors work closely with item #3 because they are an integral part of the update and upkeep process. It is common practice to provide an exit survey to students at the end of each semester, but faculty surveys are much less common. Faculty also need to have a continuous process where they can voice their opinion on what policies are working well and what may need to be changed. Faculty surveys are a good way for administrators to be proactive and keep abreast of trends and changes that may be needed	Ryan et al., 2005
6. Survey students at end of every Semester		
7. Make changes to programs based on faculty and student input	This is a follow up to items #5 and #6. Surveys are great, but they have little affect if not used to make positive changes to the curriculum, the technology, and the support structure for an online teaching program. Feedback from faculty and students should be carefully evaluated and changes should be made when possible and feasible	Ryan et al., 2005

## Appendix J

Figure 1. Implications of Proposed Solutions

Implications of <b>PROPOSED SOLUTIONS</b>		
UNIVERSITY OF CALIFORNIA	 <b>RAISE TUITION</b>	 <b>INNOVATE</b>
<b>SHORT TERM</b>	<ul style="list-style-type: none"><li>· Meet Budget Needs</li><li>· Maintain Mission</li></ul>	<ul style="list-style-type: none"><li>· Up Front Cost</li><li>· No Guaranteed ROI</li></ul>
<b>LONG TERM</b>	<ul style="list-style-type: none"><li>· Not Sustainable</li><li>· Increased Student Debt</li></ul>	<ul style="list-style-type: none"><li>· More Sustainable</li><li>· Potential to Provide Greater Access</li></ul>

Brian Fleming and Heather O'Leary. "As California Goes...." Eduventures. Last modified January 13, 2015. Accessed April 12, 2015.  
<http://www.eduventures.com/2015/01/california-goes/>.

# Appendix K

## 2014 HIGHER EDUCATION TECHNOLOGY LANDSCAPE A STUDENT LIFECYCLE FRAMEWORK AND CATEGORIZATION TECHNOLOGY PROVIDERS



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