FROM SCARCITY TO ABUNDANCE: ACHIEVING QUALITY-ASSURED MASS HIGHER EDUCATION

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ABSTRACT
To adapt to the knowledge economy The United States needs millions more educated citizens. New approaches to delivering academic quality and quality assurance in teaching and learning make effective, affordable postsecondary education accessible to more learners than ever before possible.

KEYWORDS
quality, scale, outcomes, assessment, technology as differentiator and enabler, marginalized populations

I. INTRODUCTION

The United States is in a bind. On the one hand, we need millions of additional citizens with at least one year of successful post-secondary experience to adapt to the knowledge economy. The Gates and Lumina Foundations, as well as President Obama have championed this goal in different ways. On the other hand, we have a post-secondary system that is trapped between rising costs, falling appropriations, and stagnant effectiveness, seemingly unable to respond effectively to this challenge. This paper analyzes several aspects of this problem, describes changes in the society that create the basis for solutions, and offers several examples from Kaplan University of emerging practices that suggest what good practice might look like in a world where quality-assured mass higher education is the norm.

In *The Long Tail* [1], Chris Anderson identified and evaluated the world-wide web's capacity to store unlimited amounts of data, only for the cost of entering it. The term "long tail" implies the explosion in widespread availability of items that have not, historically, been available due to insufficient demand and limited inventory space. Although his main example was the recording industry, the long tail message has major implications for other sectors, including higher education. The long tail signals the end of information scarcity and changes the rules that govern the relationships among individuals and institutions. In higher education, the end of information scarcity is a core driver in the generation of a new ecology of learning that makes the scale of operations for supporting high quality mass higher education achievable for the first time. When coupled with the consistency and flexibility of web-based programming, abundant information heralds a new age of learning opportunities. In this new age, technology enables us to serve millions of additional people with consistent and high quality.

Several recent books, including *DIY U* [2] and *Harnessing America's Wasted Talent* [3], explore the impact of this new ecology of learning on the traditional practices and assumptions of higher education. Technology's value in the new ecology of learning has expanded beyond providing more access to rewriting the rules governing the traditional value proposition that is higher education. This "rewrite" includes assuring academic quality more consistently and reliably, with more personalization and customization, better student diagnostics, and better learning support in mass higher education.

This is indeed a new frontier of learning. And it makes possible new approaches to delivering academic

quality and quality assurance in teaching and learning. Traditionally, the hierarchy of quality in higher education has been defined by accreditation, institutional reputation, and the quality of incoming students. The classroom and the curriculum have largely remained the private sanctum of the faculty member, as has the evaluation of learning. From an institutional perspective, assessing the quality of what is actually learned by each student at the course level is effectively impossible because the content as well as the standards and the evaluation of learning are interpreted by each faculty member individually, rendering comparison meaningless.

A. Guiding Assumptions

Historically, individual faculty members determined how well you did as a student in the courses they taught. Assessment was a faculty prerogative free from any serious oversight. Today, if we were educating the "sons of Harvard," we could probably still get away with it. We know that strong prior educational performance is the single best indicator of future educational performance in college. So, until the fathers and mothers of those students can't afford to pay the steadily-escalating bills associated with that model, technologically enabled efficiency and effectiveness will take a back seat to prestige. Furthermore, the inputs at a place like Harvard—students, faculty, other resources—coupled with its reputation are quality assurance enough for most people. There are, however, two further problems with this approach. First, the "quality via inputs" model won't scale to meet the requirements of mass higher education. Second, for the rest of us, including the burgeoning proprietary sector, making sure that all learners, including multiple risk factor learners, are getting what they paid for at a price they can afford is the accountability target of the 21st century.

When we look at the alternative pathways to mass, high quality postsecondary education, it is clear that technology encourages and supports learning operations at a scale and scope that were unthinkable 10 years ago. New media is changing the way learners behave, and learning is accessible to many millions more people than ever before. With the advent of mass higher education, the "learning platform" (or its future derivatives) will become the organizing architecture of college, not the campus. And, correspondingly, learning networks (or their future derivatives) will be the defining process for much of learning, not faculty governance. Although campuses and governance will remain in place, they will not be sufficient to assure external expectations for academic quality, effectiveness, efficiency, and success.

Higher education is in the early stages of a seismic shift away from curriculum and teaching and towards learning outcomes, learning support, and assessment as quality differentiators. For-profit education and other private-sector interests will play a significant role in defining and developing the potential in this migration. The sector will lead the way not because it is more virtuous, per se, but because it is not tied down politically to state funding traditions or organizationally to restrictive traditional academic processes and practices. My experience in both sectors tells me that the sector will drive innovation, spawning change and improvement, because it is able and motivated to do so, responding to the new markets, new learners, and new opportunities generated by technology.

These factors —the shift towards learning outcomes and assessment, an increasing interest and capacity for effectiveness and efficiency in learning, the new understanding of educational quality and technology's role in supporting it at scale, and the sector's ability to drive innovation and change— suggest the implications of this new ecology of learning.

B. Three Potent Possibilities

Technology offers institutions many potent possibilities including the following abilities to focus on:

the consistency and the quality of what is learned using learning outcomes and rubrics at both the course

and program levels,

the effectiveness and interplay of learner support, diagnostics, and teaching to build in and secure academic quality for all learners, including historically marginalized populations, and

scaling services and quality assurance to previously unimaginable numbers of learners.

These three points are important because breaking the barriers to scale with quality is essential if postsecondary education is going to be available to the mass of America's population. And they illustrate that technology is a key quality differentiator and well as essential enabler in achieving mass higher education.

II. SCARCITY: THE OBSTACLE TO ACHIEVING MASS HIGHER EDUCATION

Higher education's greatest strength, as it has been designed, built, and developed, is a great weakness when it comes to addressing many of the new challenges facing America today. Although we have redefined and extended higher education opportunity dramatically over the last 60 years, our system of higher education is still organized around the principle of scarcity. The scarcity principle assumes two things:

First, that the resources needed to provide an education must be collected in one place, a campus, because there is an insufficient supply of those resources in the general community.

And second, that there is a scarcity of jobs in the larger society requiring more than a high school education, creating the need for a meritocracy to decide who would compete for them.

More generally, the principle of scarcity says that, for an institution to be valuable to the community around it, it must offer a service that community members can't get more cheaply or with higher quality somewhere else. Scarcity, based on an inability to duplicate the resource, controls the market.

Scarcity has been a reality in the world of information, teaching and learning. Organizing scarce community resources to create valuable institutions—colleges and universities—has served us well, creating educational opportunity while building research centers and professional education programs of unparalleled quality and depth. In fact, there was no other choice, no other way to "do" higher education. Colleges are built around the faculty and the curriculum. They organize facilities, libraries, and laboratories (not to mention gorgeous dorms and playing fields) to host, support, and entertain the students who come to learn. They compete for students and market to students based on the quality of the living and learning experience offered by the campus. And faculty members are paid to teach, to assist in the governance, and to do research. Finally, as we know all too well, there are funding and physical space limits to the number of students who can attend a given college at any one time.

As a scarce commodity, access to college has traditionally favored people who had time for college, could afford college, and could learn effectively in colleges the way they were structured. Scarcity created a standard for access that favored some learners over others. Those who were less favored either learned differently, had to work, or were constrained by other social and economic forces. For years, incentives such as student financial aid, remedial education, and enrollment management services have been employed to level the playing field and support access for those who had been marginalized. There was, however, no alternative to the capacity limits inherent in the traditional model and its campuses other than building more of them.

As successful as higher education has been in so many ways, this natural scarcity has generated perverse parallel effects. It has become part of our cultural mythology that says to those who cannot attend college

as it is positioned, "There is a reason for this scarcity of opportunity. Opportunity is not for you. It's for the 'smart' people, those who can benefit from college." The "scarcity' model leaves out otherwise capable people who, for whatever set of reasons, find themselves on the margins of social, economic, and educational activity, struggling to get a seat at the American table of opportunity. That works for institutions that are filled with students who fit their mold. And it works in societies where there are a limited number of "knowledge-based' jobs. But it doesn't work for the capable learners who are left on the outside or for the larger society with significant vacancy rates in many higher skill jobs.

Now, however, all this has been flipped upside down. Scarcity has become a trap. Stalled by diminishing returns and soaring costs and surrounded by information abundance, traditionally organized institutions are no longer the only source of solutions. Concurrent with the emergence of abundant content, there is a significant and growing need not only for more higher education opportunity, but for more attainment and completion as well.

III. ABUNDANCE: DRIVING A NEW ECOLOGY OF LEARNING

In this section, I will describe three examples that underscore the impact of abundance on the changing education and learning landscape. The examples show how abundance overcomes the barriers established by scarcity as we have experienced them, creating a new ecology of learning to improve academic quality while serving many more people.

In the age of abundance, we have the ability as well as the need to make mass higher education achievable. Today we are faced with a significant challenge to improve and recognize the learning that millions of Americans do, strengthen our society, and create a more educated workforce to fill the jobs of the future. Conditions in society, beyond our campuses, are aligning to create an abundance of learning opportunities, using new tools and knowledge to change the rules, reinterpret the higher education world, and create higher education opportunities for previously under-served populations.

A. A Future of Unlimited Content

When the Community College of Vermont, Empire State College and several other non-campus colleges were founded in the early 1970's, they represented a philosophical statement and commitment to take learning to learners in off-campus settings and to be responsive to the needs of learners. But in the "scarcity" environment of the 1970's and 1980's, these innovative institutions were still political and educational alternatives to the campus model. They employed new, extended versions of the dominant teaching-learning approach.

The Open Education Resource (OER) movement, iTunes University, and the Global OpenCourseWare consortium symbolize something very different: an era when excellent, organized curriculum is at the fingertips of every potential learner. These free resources obliterate the traditional boundaries that defined the campus and its schedule, spawning multiple possibilities for providing and supporting organized learning. A content-rich world, accessible and diverse, is developing more rapidly every day. Technology puts curricular scarcity out of business, transforming that part of the higher education value proposition. Access to superb curricular content is no longer controlled by the faculty.

Now, thanks to the "long tail," you can get the course you want, when you want it, for your own personal learning and pleasure or to enhance your formal learning. It is at your fingertips, customized with search engines for the need or interest that you have. We are entering an age when more people, using fewer resources per person, will have access to a previously unimaginable variety of information resources. And, just as with iTunes AND MUSIC, previously excluded people will be able to get the exact information they want, when they want it.

People who want a higher education, including those who have not had access to a higher education, will have new choices. Policy-makers looking for a way to bring millions of Americans from the margin of economic opportunity to the mainstream of social, economic, and civic life have new choices as well. We need an additional, entirely different set of educational approaches if we are going to successfully harness the potential that the emerging "Long Tail" of course content brings to the critical national need for a larger, better-educated workforce to meet the demands of the emerging "knowledge" economy.

Here is just one conception of the opportunity for qualitative re-design of higher education that lies before us. Mark Hopkins, the renowned philosopher-educator, introduced the concept of "sitting on a log" with a student, discussing knowledge. This extension of the Socratic dialogue, long held as one of the finest ways for teaching and learning to happen, is now possible directly and indirectly, anytime, anywhere with a mentor, a teacher, or fellow learners, formally or informally via the web. The growing availability of high quality curricular content can provide learners with online, blended, and face-to-face opportunities for high quality teaching and learning that have not previously existed. We have returned to one of the taproots of western culture, an historic foundation for teaching and learning, the one-to-one or small group conversation, only to discover a previously unimaginable future.

Abundance of content changes forever the relationship between colleges and the learners who seek the education and credentials they offer. As surely as spring follows winter, people will become increasingly comfortable with choices that are available, accessible, and cheap when it comes to pursuing learning outside of colleges' traditional instructional format. The world, and the relationship between the learner and the university, is changing, driven by web 2.0.

B. A Future of Unlimited Access

Technology also turns the access barrier upside down. Physical scarcity has driven the educational equation since the first itinerant monk walked rural Europe. The resources available to educate people, compared to the need, have always been scarce—too few books, too few faculty members, too few campuses, too few libraries and laboratories. Campuses reflect the same scarcity through their physical limitations and their funding formulas.

Today, we face an unprecedented situation. College campuses, organized around the principle of physical scarcity, were built on the assumption that the campus was necessary to the overall endeavor of learning. They now, however, exist in a world where there are few physical barriers to learning. Even laboratory courses can be offered via the web. The only actual remaining barriers to access are capacity to do the work and ability to pay. Libraries are still important, but learners have access to previously unimaginable intellectual resources to support their learning from a wide and expanding universe of sources.

Since Allen Tough identified personal learning activities as "the adult's learning projects," we have known that most adults learn continually. Tough's research quantified the personal, self-directed learning that everyone does. The average adult spends about 15 hours a week (800 hours annually) engaged in personal learning via discrete learning projects. While the number of projects varies, most people engage in them and they range from 2 to 20 with a median of 8 projects annually [4].

When you couple this instinct to learn, and the learning projects themselves, with the resources available via the web, the opportunity for people to learn becomes turbo-charged. Is it any surprise that, in this environment, an increasing number of learners, both formal and informal, are ahead of colleges and their faculties in their learning patterns?

These learners understand and are using the technology and the content available to meet their learning needs. For example, in 2009 almost 50% of learners downloading courseware from MIT's Open CourseWare site were self-described self-learners. This was a big surprise to the organizers who had anticipated that the users would be other college students and faculty. And many of these "self-described self-learners" did not hold a Bachelors degree. For them, this is more than a recreational activity.

This is happening at a time when the demand as well as the need for higher education is soaring. We need to bring millions of additional capable learners from the margin of our society to the mainstream of economic opportunity to fill the new jobs being created. Abundant access is our friend.

C. A Future with Abundant High-Skilled Jobs

The workplace demand for people educated with at least an associate's degree has reversed itself. For the first time in our history, we have more jobs requiring higher order learning and education than we have people to fill them. This remained true even during the downturn in 2008-2009 when jobs requiring specific skills (e.g. nursing) remained unfilled even as the unemployment rate was rising. In fact, a survey of the 175 fastest growing occupations in 2008 revealed that most of them required at least an associate's degree, with many preferring the bachelor's or higher [5]. This new demand has created a new social imperative and a new marketplace for higher education. We can no longer assume a scarcity of need for educated people. We must organize for abundance, generating every trained and educated person we can get.

Let's review some salient facts.

Growth in the number of working Americans has slowed as population growth has slowed.

As our population ages, the percentage of people in the work force is declining.

Year-olds have a lower high school graduation rate than that of older Americans.

By 2014, 78% of all jobs will require some postsecondary education.

Today, only 35% of Americans have at least an Associate's Degree.

There will be a skilled labor shortage of 7 million jobs by 2010 and 21 million jobs by 2020 [6].

The entire higher education system has been built around the assumption that there were fewer jobs that required a college education than there were qualified people to fill them. Indeed, the very concept of "meritocracy," the Jeffersonian principle that underlies so much of our American promise, assumes that getting the "good" jobs should be based on merit. That makes sense. But what happens if there are more "good" jobs than there are people to fill them? The answer, from a domestic policy perspective, is "nothing good" for either the society or the people.

As we already know, however, when people learn something, they want to get formal recognition for their learning. This instinct, to be recognized and validated for what you know and can do, is forming a rising tide of aspiration in millions of learners that laps against the walls of our colleges and universities. In this emerging marketplace, our educational system needs to be creating and validating merit. We need to figure out how to recognize capacity in all its forms, not screen it out. Pat Callan, President of The National Center for Public Policy and Higher Education, addressed the issues of cost and diminishing returns as he explained the Center's 2008 report on college affordability,

"When we come out of the recession, we're really going to be in jeopardy, because the educational gap between our work force and the rest of the world will make it very hard to be competitive. Already, we are one of the few countries where 25- to 34-year-olds are less educated than older workers." [7]

If we can harness the potential of these three forces – abundant content, access, and jobs – in new

educational forms and programs, we can avoid the jeopardy that Callan foresees. And, in the process, we can use technology as a quality differentiator in mass higher education.

D. Obstacles to Adoption

Scarcity of resources, the scarcity assumption, currently describes a choice, not a necessity. Colleges' and universities' models of operation come from a different time, a time when you had to ride your horse across town to see if your friend was home to chat. The ecology, economics, and delivery processes that come with abundance run counter to those of the traditional model.

Two additional factors complicate our adoption of the necessary changes in how we think about higher education. First, we, as individuals and institutionally, can be slow to recognize, grasp, and accept large-scale changes that come at us like this. The significance of the end of scarcity, and the consequences that follow on its heels, are either denied or misunderstood by many both inside and outside of education. We like our traditions because they are familiar, a habitual way of understanding the world around us. They give us comfort and organize our world.

Second, as a consequence, the technology driving abundant information is under-utilized in higher education while some of its implications are ignored because they challenge many traditions. As things currently stand, technology is, more often than not, integrated with the curriculum and the organization of the university as it has historically been organized. So podcasts of lectures are available for the learners. Or they are used to maximize convenience, getting students quicker up-to-date information about events on campus.

But, more fundamental questions might include:

- How might an institution integrate Google, the OpenCourseWare Consortium, or iTunes University into the base of its approach to curriculum, teaching and learning?
- Can we guarantee the reliability and consistency of the learning we recognize?
- Or will the evaluation of learning remain the personal interpretation of an individual faculty member?

Most colleges have held the information revolution and the technology that supports it at arm's length. They have asked the question: how does it help us do what we already do, only better? And, as a result, the major breakthroughs to date have not been in new learning design and assessment, or portability. The breakthroughs have been with access to education, getting material to people who couldn't get it before. Although this is important, it is a gross under-utilization of technology's educational potential.

As a practical matter, if we are going to double our graduation numbers as the President and other educational and foundation leaders want us to do, we will need to reach beyond the traditional college model to succeed. Using the existing higher education model, we would need to dramatically increase the number of faculty teaching in our universities. I see no political calculus which would successfully garner the funds necessary to train and employ them. And the demand for top people in the science, technology, engineering, math and language areas outside of higher education will also defeat this goal. People with the necessary qualifications can make significantly more money working outside the academy. I see no analysis that suggests this reality will change to favor traditional higher education. So, even if we could afford to increase our traditional capacity by 50-75%, there will not be sufficient qualified workforce available in the traditional format to fill the needed positions.

The requirement for our existing colleges and universities is clear. We need our traditional system of

higher education to continue as it is, with continuing improvement, effectiveness, and efficiency to hold the center of the spectrum and sustain America's educational greatness in its traditional format. Our goal should be to achieve a higher student success rate with the spaces and facilities we have.

Current trends suggest, however, that as tuition is increased to offset budget decreases from other sources, the amount of money actually going to instruction and student support will decline. The law of diminishing returns suggests that future improvements in the success rates will be marginal in relation to the problem that needs to be solved. So, if we do not innovate and improve, millions of learners will remain on the outside, looking in. It is truly ironic. But as successful as our traditional higher education model has become, what got us where we are won't get us where we need to go.

We need a dramatic new vision for the future with new practices and new types of organizations and institutions to achieve the increased academic success we need to survive. This reformulation of how we offer higher education is now possible. Web 2.0 has created an ecology of abundance, making the availability of content, access, and a trained workforce universal.

IV. THREE EXAMPLES FROM KAPLAN HIGHER EDUCATION

The for-profit sector has the potential to be a center of innovation as we adapt to the new ecology of learning. While a culture of preservation will limit some ventures, others in the sector will continue to innovate, testing new approaches and then doing more of what works best; letting metrics and learner performance drive education decisions. And the essence of the innovations will go beyond "delivery" modalities to a rethinking of curriculum and student diagnostics and support as well as a redefinition of quality.

As the following three examples suggest, quality will be determined by a measured and evaluated process of learning, not by the reputation of faculty or an institution's history. Improved academic quality and quality assurance for all learners are the emerging core requirements for higher education. These examples describe areas in which Kaplan is innovating to clarify its academic standards and better measure academic attainment. In each case, the innovation would have been impossible to develop and take to scale for large numbers of learners and faculty without information technology.

A willingness to think differently is one thing. Kaplan did that with the "Kaplan Commitment," an innovative financing program that allows all incoming learners to take their first degree-oriented course with an option to leave within the first 5 weeks with no financial risk or academic penalty. Thus, if they change their mind, or if we think that they are not exhibiting sufficient academic performance, they can leave without penalty.

It is another thing entirely, however, to redesign processes, systems, and approaches in a continuous improvement process that moves the University and its learners steadily forward towards higher academic quality, improved persistence and graduation rates, and better employment outcomes. In these academic activities, the concept of academic quality includes appropriate learning that has been achieved in other formal settings as well as informal knowledge, skills and abilities acquired through OER resources or broader life experience.

Academic quality also extends the traditional conception of "being smart" to a broader understanding of capacity that includes being ready and capable of contributing to society civically, socially, and economically; or, more succinctly, being ready to work. This is a critical distinction. How many times in higher education have we graduated successful students only for them and employers to learn that they

are not ready to be successful in the workplace or be productive as a team member in the workplace on day one?

This broader understanding of what it means to be well-educated will be underpinned by learning assessments that are valid, consistent, reliable, and tied to the knowledge skills and abilities that citizenship and the global economy require. And these assessments will be evaluated themselves for consistency by independent third party reviewers, on a continuing basis.

A. Course Level Assessments (CLA)

In an increasingly mobile society, with burgeoning opportunities to learn throughout life, the accuracy, clarity, and transparency of learning assessment at the course level is essential. Academic outcomes that are consistently and rigorously assessed by the institution and validated by third parties will be seen to have integrity in the 21st century, earning the respect and confidence of employers and students alike.

Course level assessment (CLA) is one of Kaplan's answers to this emerging need. CLA measures student learning and informs our continuous academic improvement process with processes that have been developed to indentify and assess learning outcomes. CLA measures student mastery of stated course level learning outcomes in an objective way. It is criterion-references, not norm referenced. The scores obtained measure the student's current skill mastery and knowledge described by the outcomes. CLAs support program-level outcomes while providing the framework for assessing specific learning objectives and activities within a course. Outcomes also share the following characteristics:

- Each describes one primary area of knowledge or skill.
- Each reflects specific behaviors underlying the knowledge or skills for which students should be able to demonstrate mastery by the end of the course.
- Each is written in a style that reflects the appropriate level of complexity of the underlying cognitive tasks required for given levels of mastery.

Tracking student learning outcomes at the course level allows us to gauge both the effectiveness and the career relevance of our instruction and our curriculum—and to engage in a continuous improvement process.

The learning outcomes are supported by rubrics at the course level. For each course, faculty members assess student success in all of the course's outcomes using standardized rubrics. Rubrics are developed for each outcome based on specific criteria, identifying student progress towards Mastery. Scores on outcomes are then analyzed to determine if students are gaining the desired mastery. And as students progress through their programs of study, their progress on achieving these outcomes is monitored. Figure 1 portrays some of the early data collected via this method [8].

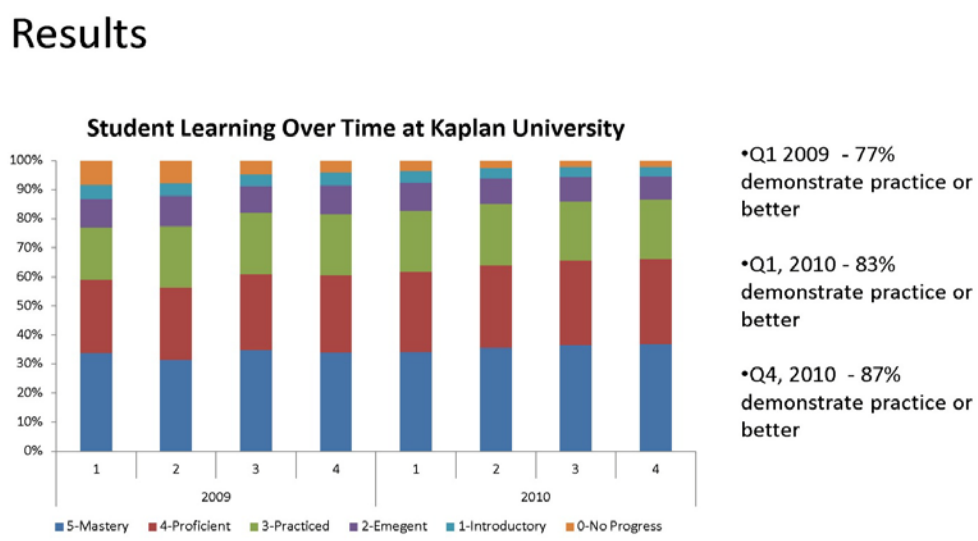

Figure 1. Consistent gains since implementation of course level assessment

This approach allows us to achieve a high degree of consistency and academic quality in multiple ways. They include:

- Consistent and transparent standards and learning expectations for participating students across every section of the every course.
- Equally consistent and transparent expectations for the student-facing experience as well.
- A consistent curricular and outcome structure within which faculty teaching can flex and adapt given learner needs and faculty strengths.

So, the CLA gauges student progress on mastering the general education literacies and discipline specific course outcomes throughout the learner's degree program. We evaluate on a 0-5 scale with 0=no progress, 3= "practiced," and 5=mastery. The objective is that each learner will reach mastery of discipline course outcomes by the end of the course and mastery of general education outcomes by degree completion.

The rubric structure allows us to look at the "profile of learning" within a section or across all sections of a particular course to identify anomalies and success rates as well as levels of learning [9]. Technology is the key differentiator in being able to gather and analyze this kind of data.

- First, technology allows us to scale this research to all of our learners, ultimately collecting information on hundreds of thousands of student/courses per year.
- Second, technology allows us to collect consistent information across every section, something that would be impossible in a traditional institution's classrooms.
- And third, we know that we have clear control over the means and structure of learning assessment, leading to a high degree of consistency in that process as well.

B. Using a Curricular Matrix to Deepen Learning and Improve Curriculum Quality

Our use of technology also gives us the capacity to embed certain learning outcomes across the

curriculum in a matrixed approach. So, in a single course experience, we can evaluate the student's mastery of the substance of the course. We can also, however, evaluate other knowledge development such as writing, team-work, or critical thinking as well.

For example, General Education at Kaplan University is taught through a core curriculum of six courses with other outcomes distributed throughout the undergraduate curriculum. The overall program goal is for the student to be literate and knowledgeable in the following nine areas.

Arts and Humanities

Communication

Critical Thinking

Ethics

Mathematics

Research and Information

Science

The distribution of outcomes allows us to "double up" the learning in our undergraduate courses, getting better value for the learner and increased effectiveness and efficiency for the institution. In this approach, the vast majority of courses contain a communication course outcome, key to our writing across the curriculum approach. All required courses also contain course outcomes in Critical Thinking, Ethics, or Research and Information, while elective courses contain evenly distributed course outcomes in Arts and Humanities, Mathematics, Science, or Social Science. Technological literacy is reinforced throughout a student's program. Examples of this "matrixing" are shown in Appendix A [10].

As mentioned above, this method provides several other advantages including,

- Centrally managed curriculum ensuring consistent learning objective distribution.
- Consistent course outcomes across course sections and faculty
- Consistent faculty training on rubric use to assure inter-rater reliability
- Universal learning objectives with common rubrics to evaluate student learning.

To date, we have conducted two studies on this approach.

In the 2009 cohort study, we used three courses in sequence, with all students remaining enrolled. We reviewed the percentage of students achieving "practiced or higher" in the communication outcome: *Demonstrate college-level communication through the composition of original materials in standard American English.* Students achieving "practiced" or better increased from 76% in the first course to 85% in the third course, documenting steady improvement in core academic skills of students as they progressed through courses.

In the 2010 ethics and communications study, the sample included 2581 BS in Psychology students learning at the 1-, 2-, and 400 levels. They were each assessed in ethics and communications. In ethics, the average scores for students were 2.72 (100 level), to 3.54 (200 level), and 3.64 (400 level) respectively. In communications, the average scores improved from 3.20 (100 level) to 3.49 (200 level) to 3.54 (400 level). Our initial conclusions are that the general education program is resulting in documented student improvement of core general education skills in the areas of ethics and communications [9].

As students progress through their programs of study, their progress on achieving these outcomes is monitored. CLAs provide feedback to students, faculty and administration about specific knowledge and skills acquired by a student during the course of his or her education. We use this feedback to improve the quality of our courses and to support our faculty's ability to improve the proportion of students who achieve proficiency and mastery.

This ability to employ technology to matrix learning outcomes within a single learning experience also has implications for reducing the time and cost to degree without reducing learning. If, for example, the outcomes embedded across the curriculum amounted to the equivalent of 30 credits, we could consider increasing the credit award per course and decreasing the number of courses required for graduation. By deepening the learning we are assessing, we further enrich the value of all learning experiences.

C. Improving Student Support and Success through Personalized Services

The KNEXT (Knowledge Extension) program is an online teacher-led or self-paced diagnostic program. Using a portfolio development approach with an independent third party evaluation of credit claimed, KNEXT provides a comprehensive assessment of learning gleaned from prior life experience. Enrolled students are actively encouraged to make use of all prior learning—degrees and certificates earned, past college experience, professional seminars and applicable work and life experience.

KNEXT is a form of pedagogy as well as a powerful diagnostic for the learner. Participants learn how to actively and consciously reflect on their experience defining the learning that has been generated by that experience.

In seeing anew what they know and how they learned it, the KNEXT process personalizes the degree planning and educational design process for each learner, transforming aspiration and motivation as a consequence. As a result, students who complete the course enjoy three significant educational benefits.

First, they save time and money on the way to earning their degree. Data from the recent CAEL report, "Fueling the Race," indicated that students who received credit through a prior learning portfolio process persisted to graduation within 7 years at more than twice the rate of those who did not [11]. Our data for KNEXT participants indicates an even more favorable success ratio.

Second, they perform significantly better than other students in the ensuing courses that they take. As we track student performance inside Kaplan University, KNEXT "graduates" consistently do better in each course that they take subsequent to their portfolio completion.

And third, they persist to completion at significantly higher rates. In both the CAEL report data and our internal data at KNEXT, students with portfolio assessment credit persist significantly longer than those who do not.

Data gathered from 1062 students who enrolled in the KNEXT assessment course indicate that 81% of those who enrolled finished the course successfully, and more than 75% of those who enrolled in the course have either graduated from Kaplan University or are still enrolled [12].

Historically, campus-based programs like KNEXT have been hamstrung by the available communication and information processing systems. There has been no way to scale the programs because of the volumes of accumulated information in each portfolio that could only be processed by hand. Put another way,

logistics required that such programs be small and of a boutique nature.

Today, thanks to the tools available through technology and social networking, assessment of prior sponsored and non-sponsored learning can be done to scale with rigorous third party quality assurance. Furthermore, the student, with her portfolio, can then "shop" her transcript at any college electronically, dramatically reducing the time involved in finding out which credits will transfer and which will not at each institution. This is a major shift towards the student in pedagogy (active reflection), access (knowing college standards) and responsibility (shopping for the best college fit).

V. CONCLUSION

What does this "new ecology" of learning mean for higher education in the 21st century? The list of answers is far longer and more complex than the implications discussed in this paper. Having said that, let me use one more example from Kaplan University and then describe its implications. Kaplan offers its degree programs in four formats – on line, blended, on campus, and supported by drop-in learning centers. Using our outcomes-based, course level assessment program as the foundation, we can offer the KNEXT diagnostic service to place learners accurately on their degree paths saving them time and money towards their degrees. This is effective across all of the different teaching and learning models we offer. And we are also providing a consistent curriculum with embedded general education components across all of the modalities.

So, regardless of the delivery model, the learning outcomes and rubrics used for measurement are the same. Importantly, the commitment to course-level assessment supported by rubrics assures consistent outcomes across all modalities while allowing for appropriate flexibility for the faculty member to teach in the manner she feels is most effective. Having a strong, clear, and consistent approach to learning outcomes at the course level permits more flexibility during the teaching and learning process. The assessment of learning becomes the distinguishing feature, the place where quality is assigned.

We all know that when adult learners leave school without completing, often the reason is very personal to them and their life circumstances. Life happens, as the saying goes. Using this approach, made possible by technology, Kaplan University allows an adult learner to move from model to model – beginning on a campus, then moving to blended, online, or learning-center-supported programs; or vice versa – as they need to do so. The university itself becomes a matrixed learning environment that can adapt effortlessly to the changing needs of its learners as their lives unfold. Without the added efficiency, effectiveness, and capacity that technology provides, this level of personal responsiveness coupled with consistent academic quality would be impossible.

Having consistent, reliable, and valid assessments that are linked to life skills as well as workplace and professional abilities will become the new standard for academic quality in a world that is increasingly mobile with an ever-increasing need for more well-educated people. Academic quality that is derived from the reputation of the institution will continue to have validity in specific cases. But in an environment fueled by abundance, efficiency, and effectiveness where mass higher education is both possible and desirable, having valid, reliable, and consistent assessments of transparent learning outcomes will become the dominant quality standard. Having transcripts that tell the reader what the learner knows and is able to do as a result of her learning will be a significant quality differentiator made possible by technology.

The underlying capacity that enables this change is technology's capacity to provide not only the abundance, but also the efficiency and effectiveness required to support educational services with consistent, clear, and rigorous standards to additional millions of people. This is the key to quality-

assured mass higher education.

VI. ABOUT THE AUTHOR

Peter S. Smith is Senior Vice President for Academic Strategy and Development at Kaplan Higher Education. He has served as the founding president of the Community College of Vermont (1970-78), and California State University, Monterey Bay (1995-2005) as well as dean of the graduate school of education at the George Washington University (1991-95). Smith served as lieutenant governor and congressman from Vermont. Immediately prior to joing Kaplan Higher Education, he served as the assistant director general for education at UNESCO in Paris. He is the author of Harnessing *America's Wasted Talent: A New Ecology of Learning* (Jossey-Bass, 2010) and *The Quiet Crisis: How Higher Education is Failing America* (Anker, 2004).

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VIII. APPENDIX, SAMPLE OUTCOMES

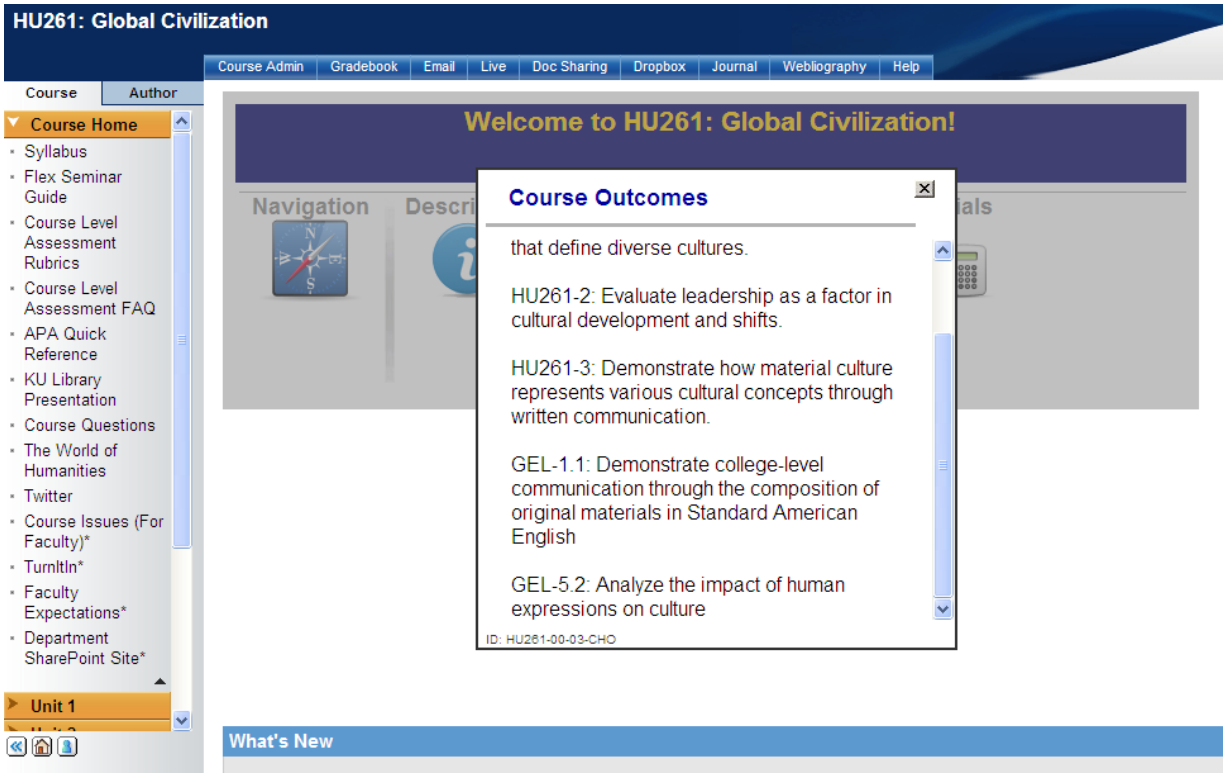

Figure 2. Course Outcomes for HU 261 Global Civilization

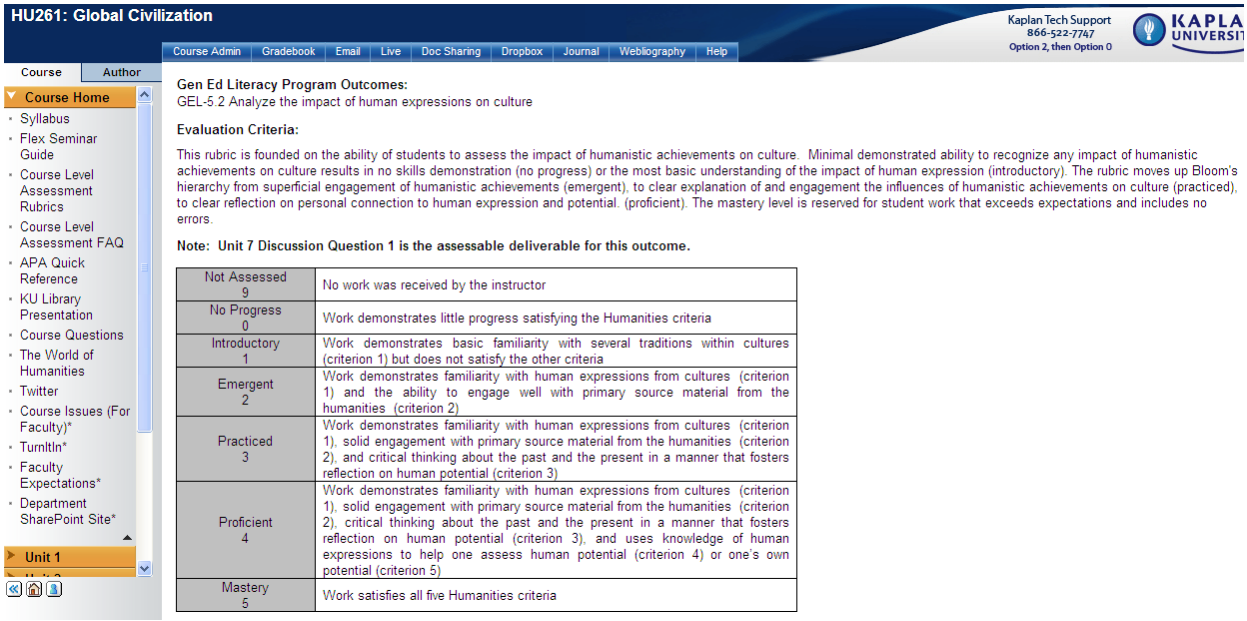

Figure 3. Gen Ed Literacy Outcomes Rubric for Analysis for HU 261 Global Civilization

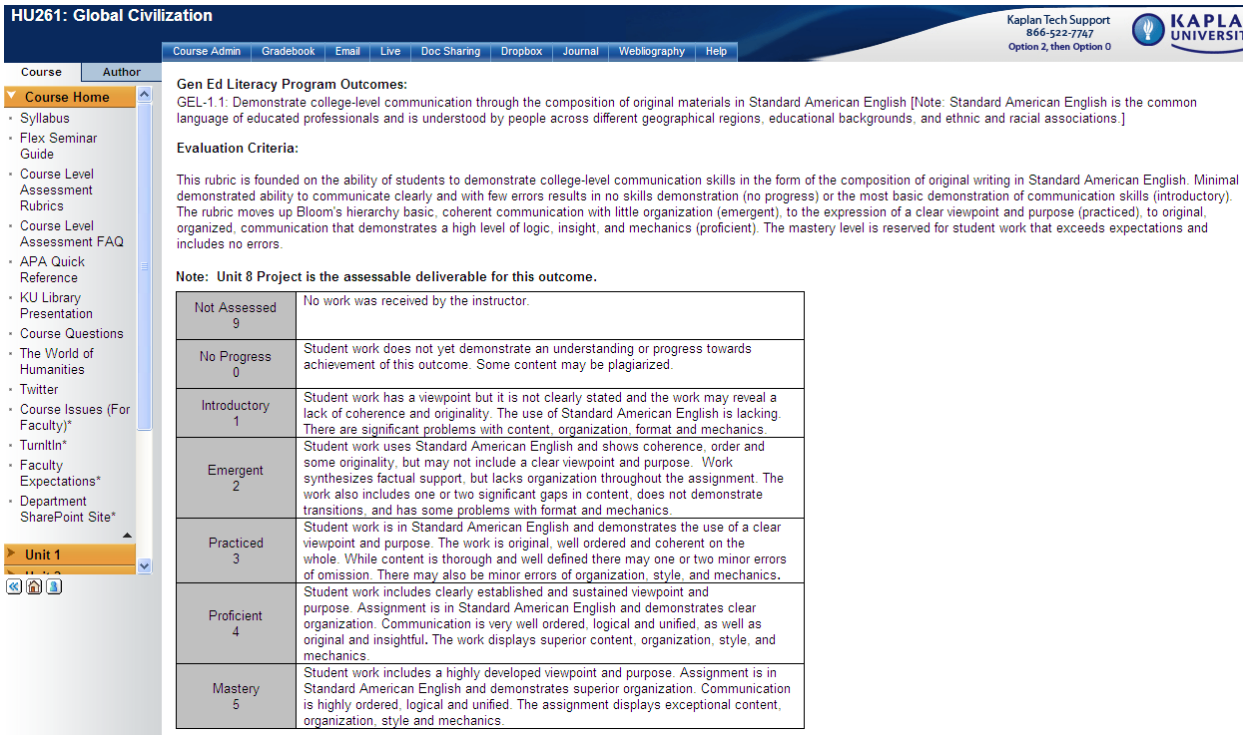

Figure 4. Gen Ed Literacy Outcomes Rubric for Communication for HU 261 Global Civilization