“Using Learning Analytics and Instructional Design to Inform, Find and Scale Quality Online Learning”

by

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Abstract

How do we improve the perception and experience of online learning? In this chapter, we use the COVID-19 Pandemic teaching experience of the University of Maryland, Baltimore County (UMBC) as a case study in how institutions might leverage learning analytics and instructional design to inform, find and scale quality of the online learning experience and outcomes for both faculty and students. To do so, we offer a selected review of the research and practice about online learning quality generally (albeit before its largest implementation to date), followed by UMBC’s thought leadership in learning analytics that has helped create a foundation and culture of assessment. Then, using our Planning Instructional Variety in Online Teaching (PIVOT) initiative as a response to the Pandemic, we focus especially on outcomes assessment baked into the planning process to show the impact faculty training can have on the perception and reality of online learning quality. However, to bring about lasting change beyond an immediate crisis, we also need to change the culture. We need to win the hearts and minds of faculty by clearly showing the benefits of quality design and delivery of online education.

Introduction

During a recent panel presentation at an online learning leadership conference, moderator Tom Cavanagh, who is Vice Provost for Digital Learning at the University of Central Florida (UCF), asked a simple but profound question: “What are we going to do when the backlash against online instruction occurs after the Pandemic?” (2021).

Cavanagh’s question hits a nerve for several reasons. First, it is somewhat surprising coming from a leader at UCF, considered by many to be one of the largest and most experienced institutions to effectively use online learning for student success. Cavanagh’s UCF colleagues, Kelvin Thompson and Patsy Moskal, even attempted to manage expectations early in the Coronavirus Pandemic by arguing that a rapid move to widespread remote instruction was not the same as intentionally-designed online learning (2020). But if UCF can expect a backlash about online learning, chances are most institutions should do so as well.

Second, Cavanagh’s question speaks to a perception that may be widespread among many institutions: the Pandemic caught higher ed by surprise, leaving faculty and students little time to prepare for or adjust to virtual instruction -- indeed virtual institutions, too. As such, was this a mass improvement -- by scaling -- of online learning quality or a mass demonstration of the status quo when the Covid meteor hit? While higher ed’s massive Pandemic pivot to online learning rivals what the most ardent MOOC proponents could ever have hoped for, a new backlash could make it even harder to win long-term institutional investment in online learning as a strategic priority, as Educause recently reported (McCormack, 2021). You can just hear it now, with accompanying eye rolls: “Oh, we tried online learning during the Pandemic. It didn’t work.”

Finally, was the massive scale of online learning only “temporarily strategic,” to get through a global health crisis? Or did something happen that will fundamentally transform teaching and learning going forward? Only time will tell, but given predictions about a looming “demographic cliff” projecting a dramatic decline in the number of traditional 18-to-22 year-old, college-aged students (Hoover, 2020), the Pandemic pivot to online learning could be a rehearsal for more flexible forms of learning that will appeal to -- and be required by -- a wider group of adult degree seekers. At UMBC, we have even seen that play out through our Finish Line near completer re-engagement initiative made possible by our new-found supply of online courses (Rous et al., 2021).

In this chapter, we wish to use the Pandemic teaching experience of the University of Maryland, Baltimore County (UMBC) as a case study in how institutions might leverage instructional design *and* learning analytics to inform, assess and scale quality of the online learning experience and outcomes for both faculty and students. To do so, we’ll first provide a brief, selected review of the research and practice about online learning quality generally (albeit before the largest implementation to date), followed by UMBC’s thought leadership in learning analytics that has helped create a foundation and culture of assessment. Then, using our Planning Instructional Variety in Online Teaching (PIVOT) initiative, we’ll focus especially on outcomes assessment baked into the planning process so we could report on the impact that faculty training can have on the perception and reality of online learning quality -- even during a pandemic.

Selected Research and Practice About Online Learning Quality

Even before the Pandemic, there has been an extensive body of research and practice exploring (and debating) the quality of online learning, especially compared to traditional, face-to-face (F2F) learning. A few key themes are worth summarizing to help frame our discussion of post-Pandemic online learning quality generally and the UMBC case study specifically.

First, QualityMatters (QM) is one of the most highly respected, research-based standards organizations supporting and promoting quality in online and hybrid course design. QM is subscription funded, but actually began as MarylandOnline through a grant from the U.S. Department of Education's Fund for the Improvement of Postsecondary Education (FIPSE). UMBC has had an institutional license for years, and QM informed a 2014 redesign of our Alternate Delivery Program (ADP), which was the basis for our PIVOT program during the Coronavirus Pandemic.

Currently used by more than 40,000 educators throughout the world (Adair & Shattuck, 2015), QM offers peer review of online and hybrid courses using its rubric. Currently in its sixth edition, the rubric is available for higher education, K-12, and continuing/professional education. A central theme in the QM rubric and course review process is ensuring alignment where assessments, learner engagement, instructional materials, and course tools reinforce and support the course and unit-level learning objectives. As such, QM standards inform course design and not course delivery, which can also be less threatening when initially introducing a rubric of "quality standards" to faculty.

Second, in 2019, the e-Literate blog known for touting "what we're learning online about online learning," published an extensive, three-part review of seven rubrics

(including QM) about online learning quality. In Part 1, the series author, Kevin Kelly, states that “Currently, the primary method to scale online course quality is through the use of rubrics that inform online course (re)design.” In Part 2, Kelly specifically references the Quality Matters Research Library that “can be searched by standard or keyword and a set of Curated Resources” [**emphasis added below**]:

> Of these 25 curated studies, four studies . . . look at the end results, or **to what extent redesigning a course based on the rubric affects students completing and/or passing a course. An equal number of studies investigate . . . changes in faculty behavior as a result of training and exposure to the rubric**.

In Part 3 of the e-Literate series, Kelly critiques most online rubrics (including QM’s) for not including student engagement or interaction data as part of the calculus for determining online learning quality. In other words, most rubrics look at the quality of an online or hybrid course *design* (before students ever see or participate in the course). But what happens if faculty design or intent does not match or satisfy the student expectations or experience? The result could be a mismatch in perceived vs. actual experience of online learning quality. As Kelly notes:

> If both the research literature and the accreditation bodies state that interaction, community, and the like are critical to online student persistence and success, then the online course design rubric providers should provide more criteria for and guidance about reviewing faculty-student and student-student interaction after the course has begun.

The continuous improvement process fostered by QM, however, supports additional reflection on both course design and instruction, encouraging faculty and institutions to explore and define what quality means to online learning (Martin et al., 2019). Additional metrics often leveraged to describe or identify quality in online learning include, but are not limited to, course evaluations and faculty peer feedback. Since many quality assurance rubrics do not assess delivery, including QM, extensive engagement indicators may also be useful for identifying quality (Southard & Mooney, 2015). Multidimensional checklists and engagement frameworks may encourage faculty and students to assess planned and actual engagement level as well as evidence of active learning (Bigatel & Edel-Malizia, 2018), however, these require frequent monitoring and reflection that may not be feasible with certain types of online courses.

Here is why combining instructional design with learning analytics may help, by marrying course design (or intent) with user experience data and outcomes. In the section that follows, we'll first define learning analytics and then summarize how it has been applied to both student success interventions and faculty course design at UMBC. As we shall see, much of the infrastructure for evaluating the impact of UMBC's Pandemic-related faculty training initiative was already in place beforehand, which is why we were able to quickly leverage it to roll out and assess the PIVOT program.

Learning Analytics in Higher Ed and at UMBC

Learning analytics (LA) is frequently defined as "the collection and analysis of usage data associated with student learning" the purpose of which is "to observe and understand learning behaviors in order to enable appropriate interventions" (Brown,

2011). Given the specific focus on “interventions,” not just analysis, learning analytics -- like analytics or “business intelligence” generally -- has also become known as “actionable intelligence.” This is important because while final grades in pre-requisite courses are necessary for degree progression, they occur too late in the semester for actionable interventions that might help students while taking the course.

Accordingly, LA is often associated with students’ use of digital tools like the campus learning management system (LMS), the most widely used instructional technology in higher education, precisely because it may be possible to infer students’ time, attention, effort and even engagement earlier in a term. While grade point average (GPA) and course credits support a perspective of student success *across* terms -- in order to complete graduation requirements -- learning analytics typically tries to look at student engagement *during* a term, preferably as early as possible when there may be more time to change a student’s projected trajectory and outcome.

However, this is also important: Student usage data in an IT system is not the same as student learning itself, which has led some researchers to understandably distinguish between “learner analytics” vs. “learning analytics” (Bishop, 2017). As such, it’s best to look at students’ “digital footprints” in campus IT systems as a *proxy* for engagement, that might be correlated with academic performance like final grades and GPA. Many social science studies use proxies to operationalize concepts that may be inherently difficult to measure (e.g., social capital, standard of living, belonging, resilience, etc.), and LA is no different.

For well over a decade, UMBC has been a thought-leading institution in higher education's maturing use of learning analytics. For example, consider the following that we have observed as an institution through the use of LA:

- Since 2008, students earning a D or F typically use our Blackboard (Bb) LMS 40% less than peers earning higher grades. At the time, usage or activity simply meant "hits and clicks" -- recorded when they log into Bb, access a course, click on content, post in a discussion board or submit an assignment (Fritz, 2011).
- While we have developed a student-facing dashboard called Check My Activity (CMA) to help raise student awareness and nudge help-seeking behavior (Fritz, 2017), given the relationship between student LMS activity and course outcomes, we and others also began looking at how faculty use an LMS course to express their pedagogy and course design (Campbell, 2007; Dawson et al., 2008; Fritz, 2011; Fritz & Whitmer, 2017; Macfadyen & Dawson, 2012; Whitmer, 2012).
- In fact, it is now commonly accepted that there are three main ways faculty use an LMS, and typically in order of wide-spread use: 1) user & document management, 2) interaction & communication, and 3) online assessments. Ironically, the latter, especially auto-graded quizzes, exams and assignments that an LMS is purpose-built to provide, typically generate far more student LMS activity than simply posting content like the syllabus, presentations or readings, yet fewer numbers of faculty actually do this. (Fritz, 2019)
- Also, based on a study by Blackboard (Whitmer et al., 2016) we've recently learned that the "strength of relationship" between student LMS usage and final course grades across our Fall 19, Spring 20 and Fall 20 terms was highly

correlated with five LMS course design “archetypes” established by Blackboard -- based on analysis of more than 3,374,462 unique students, in 70,000 courses from 927 institutions hosted by Blackboard in North America in Spring 2016 -- ranging from “supplemental” to “holistic” courses (described below):

  - Supplemental (content-heavy, low interaction)
  - Complementary (one-way communication via content, announcements and gradebook)
  - Social (high peer-to-peer interaction through discussion board)
  - Evaluative (heavy use of assessments)
  - Holistic (high LMS activity, balanced use of assessments, content and discussion).

- Specifically, we sorted all courses by "fit" (e.g., how well or poorly a course’s activity correlates to final grade). Essentially, this is the slope of a line (covariance divided by variance of independent variables) from final grades of A to B to C to D to F. If the slope is zero, there's little to no difference in student LMS activity by grade. If the slope is large, then As are more active than Bs, which are more active than Cs and so on (Fritz et al., Forthcoming).
- Finally, we recognize some may have concerns about using “big data” to monitor students, let alone serve as the basis of nudges and interventions. However, in addition to acting on what we think we know or observe about our students, we take John Campbell’s classic LA question to heart: “What is an institution’s ethical obligation of knowing?” (Fritz & Whitmer, 2020).

With this LA experience in mind, let us now turn to how UMBC spent its Pandemic, with a particular focus on assessing the impact of faculty training on student perceptions of online learning quality, course evaluations and even faculty willingness to consider non-traditional alternatives to traditional (F2F) teaching after the Pandemic ends.

UMBC's Pandemic PIVOT

Many faculty already know how to use available instructional technology tools to supplement most forms of classroom teaching. But planning and teaching courses entirely online requires technical training and integration of the tools into pedagogy, which takes time. (Ward & Benson, 2010).

Fortunately, as mentioned above, we were able to build on prior experience from our Alternate Delivery Program (ADP), first offered in 2006 as a collaboration between our Division of Information Technology (DoIT) and Division of Professional Studies (DPS). During the 14 years of its existence, nearly 90 faculty have participated in the ADP, and were provided financial, technical, and pedagogical support as they developed hybrid and online courses for winter/summer delivery. Effective practices and peer feedback were critical components of ADP with the introduction of Quality Matters standards for course design into the program's curriculum revision in 2014.

Theory and Practice

Like the ADP, our Planning Instructional Variety in Online Teaching (PIVOT) initiative was grounded in the evidence-based principles for how people learn, and

shares many of the best practices of teaching in face-to-face classrooms (Chickering & Gamson, 1987), but leverages those principles and adapts the practices to the online environment (Dayton & Vaughn, 2007; Rienties et al., 2013). Providing faculty with opportunities to work in an online environment from the student perspective was also a critical component, especially if they did not have prior online teaching experience (Benson & Ward, 2013). Quality Matters informed much of PIVOT's conception and delivery, both to effectively demonstrate key design principles in practice and to emphasize value to student success. We knew that faculty engagement in planning and delivering this important training was critical to forming peer relationships (Bain, 2004), adopting new technologies (Rogers, 1976), and building long-term networks for reducing the isolation associated with teaching online (Covington et al., 2005; Shapiro, 2006).

The formal PIVOT program was delivered in multiple pathways to support faculty schedules and preferred training formats. PIVOT Live was a synchronous model consisting of five webinars over five days; the first prototypes were offered before the Spring 2020 semester ended. This option was ideal for participants who had some experience with course development and online instruction. PIVOT topics were selected to focus on helping instructors achieve competency in areas related to pedagogy, course design and development as well as technical and administrative skills.

Offered after the spring semester concluded, a more rigorous, 2-week PIVOT+ program included two faculty mentors per cohort for pedagogical and technical facilitation. Twenty-five PIVOT mentors from our three colleges supported the faculty during the program and throughout the summer, and in some cases into Fall 2020 and

beyond. The PIVOT mentors logged in every day, hosted office hours, responded to their group questions, demonstrated course designs and tool usage. They were exemplary models of peer engagement during a time when many faculty needed this support.

Despite the Pandemic, proactive support from the administration allowed and encouraged UMBC faculty to explore pedagogical innovation during a challenging period (Garrison Institute, 2013). Faculty received stipends to complete PIVOT programming and mentors were compensated for their time and support. Funding was provided by the Provost's office under the Hrabowski Innovation Fund, which was established in 2012 through substantial grants from the Carnegie Corporation of New York and the Heinz Awards to support initiatives for enhancing teaching and learning at UMBC.

Adoption

The scope and impact of PIVOT was apparent when the workshops were posted for online registration in Spring and Summer 2020. Expecting less than fifty participants for the prototypes offered during the first week of May, UMBC recorded more than 1,000 registrations with 764 actual attendees during the week for one or more of the five-day PIVOT Live sessions. Collectively, this demand represented more than 250 unique PIVOT Live participants engaged during the week, nearly half of whom were teaching online during the summer. The success of PIVOT Live resulted in two additional offerings in June and August.

Organized into college disciplines and communities or practice (e.g., labs, large enrollment), 275 faculty completed the more rigorous,10-day PIVOT Plus (+) program.

The College of Engineering and Information Technology (CoEIT) further coordinated peer driven webinars and panels on STEM-specific topics while the College of Arts, Humanities, and Social Sciences (CAHSS) organized smaller department-based cohorts within its larger PIVOT+ training to facilitate deeper conversations on course-specific topics. All colleges leveraged peer faculty mentors.

Impact

Leveraging an approach that targeted an individual instructor's reflection on technology use, online pedagogies, and course content (Mishra & Koehler, 2006), the PIVOT program benefited faculty and students in the following ways:

Faculty:

- Around 77% of PIVOT Live participants and nearly 85% of PIVOT+ participants said the program was helpful for their shift to online teaching.
- Faculty found their role as students (78%) and access to peer mentors (77%) to be among the most valuable aspects of the PIVOT+ program. As one instructor wrote, "PIVOT brought together a very heterogeneous group of educators, from those with a deep skepticism about the online delivery of instruction to those that are fond of technology. Such diversity made the discussion very productive and enlightening."
- Faculty feedback suggested that the topics covered were highly valuable. Learning objectives and alignment, active learning and assessment, engagement and community building, and getting students started with a strong course introduction were among the popular sessions. Increased interest in supporting

tools associated with student engagement and active learning drove further changes to training schedules.

- Results from a February 2021 survey about lessons learned from teaching online during Fall 2020 suggests a shift in the faculty's pre/post pandemic teaching preferences for Fall 2021 (Penniston & Hawken, 2021). While 81% of 204 faculty respondents said they preferred to teach in a traditional (F2F) format before the pandemic, only 50% said they preferred to teach F2F going forward (see Figure 1 below). The change in pre- vs. post-pandemic preference for F2F delivery was slightly greater for PIVOT-trained faculty (34%) vs. non-PIVOT faculty (28%). Across the board, all faculty cited learner engagement as an area of concern, however, non-PIVOT faculty cited learner engagement as a concern more often than PIVOT faculty who received specific pedagogical and technical support.

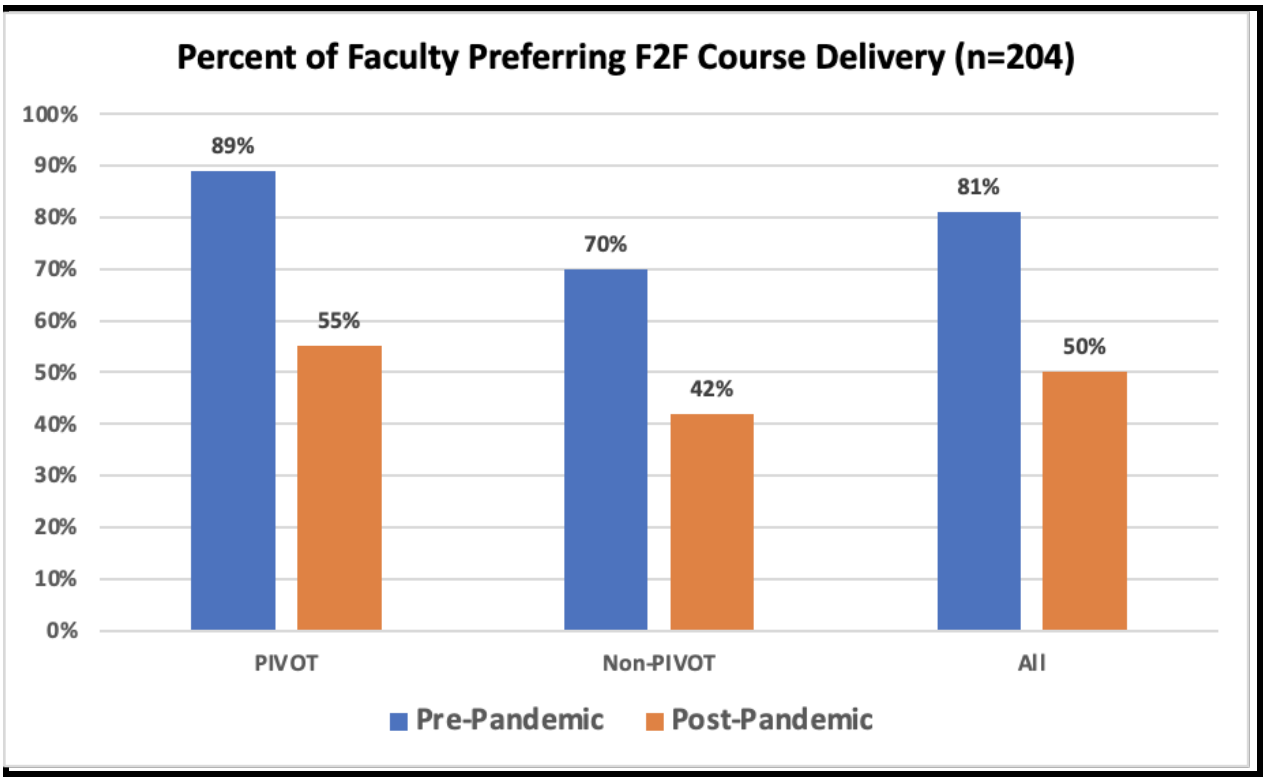


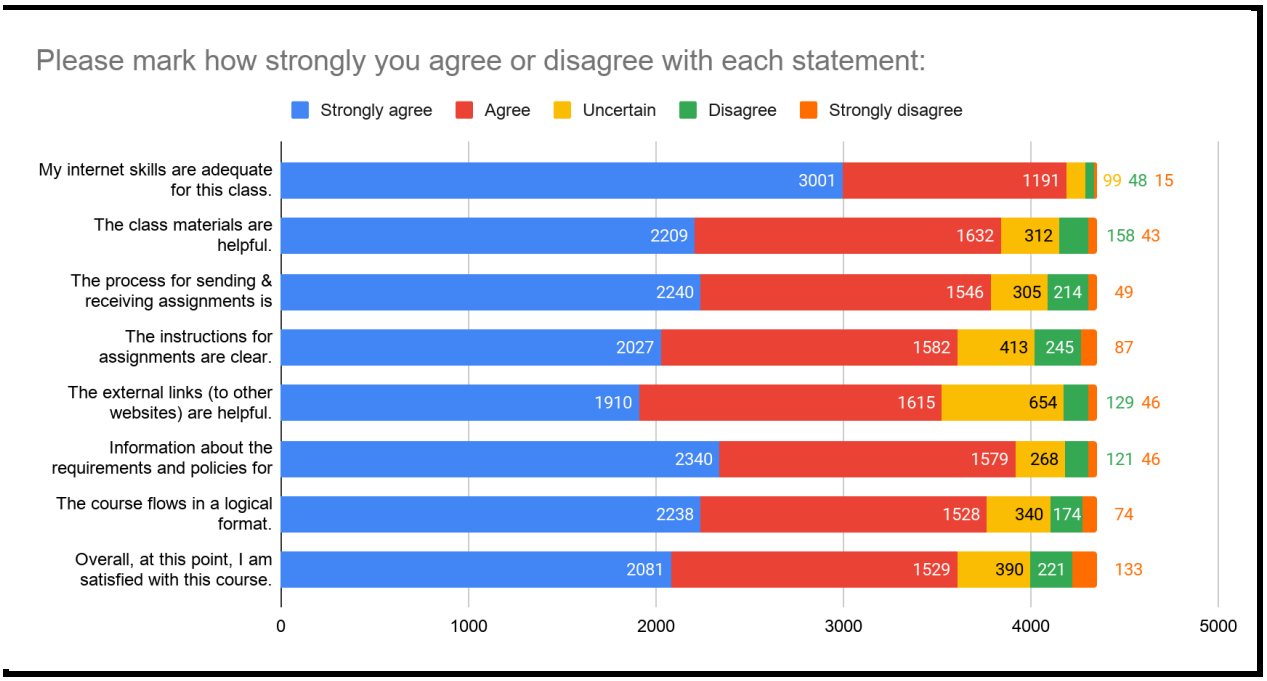
Figure 1: UMBC "Lessons Learned" Faculty Survey (Spring 2021)

Students:

- In a survey distributed to more than 500 courses taught by faculty who completed the PIVOT+ professional development program this past summer, students said they enjoyed taking classes that were well organized and planned (Hawken, 2020). This underscores the importance of findability and aligns to student self-efficacy and motivation (Simunich et al., 2015).
- More than 85% of students who completed surveys said they agreed or strongly agreed that PIVOT+ courses flowed in a logical format. About 90% agreed or strongly agreed that requirements for the course were clear while 83% agreed or strongly agreed that instructions for assignments were clear. This is consistent

with research indicating students value clear instructions for getting started, descriptive criteria for course activities and assignments, and consistent navigation (Ralston-Berg, 2014).

Figure 2: Fall 2020 UMBC Student Mid-term Survey About PIVOT Courses



- Moreover, there is a statistically significant ($p<.001$), positive relationship between a faculty member completing PIVOT training and elevated course-level average values on Student Evaluation of Educational Quality (SEEQ) surveys ($p<.001$). For Fall 2020, student course evaluations improved by about .08 for those faculty who completed the training when compared with classes taught by instructors who did not (4.354 on a scale of 1-5) (Penniston, 2021).
- Courses taught by PIVOT-trained instructors also have increased Bb interactions, which are both indicative of improved engagement, and can also be

leveraged for more precise predictive modeling to inform student outreach (Penniston, 2019)

- DFW rates for PIVOT-instructed courses did not increase when compared with the pre-pandemic baseline.

Finally, it is worth noting that DoIT's Instructional Technology team -- and our host of 25 faculty PIVOT peer mentors -- recently won UMBC's 2021 "Job Well Done" award from the University's Human Resources office.

Lessons Learned

As we reflect on UMBC's Pandemic pivot to online learning -- and complementary use of instructional design and learning analytics -- a few observations may be useful for others who anticipate questions about the value and quality of online learning, let alone if and how it should be part of an institution's post-Pandemic strategy.

First, there is a difference between equivalent course delivery and equivalent learning outcomes. When UMBC was first exploring alternate delivery formats in the early 2000s, some in our faculty senate raised concerns about traditional (F2F) undergraduate courses being redesigned for online or hybrid delivery. Our instructional technology support staff were even asked to appear before the faculty senate's undergraduate council that approves all new undergraduate courses, to justify our support of faculty proposing to design and deliver online or hybrid alternatives. Among other things, the senators asked how online or hybrid courses could offer equivalent "contact hours" or "seat time" compared to the traditional version of the same course.

Eventually, we leaned upon a little known provision in the Code of Maryland (CoMAR) that had allowed our sister institution, University of Maryland University College (now known as University of Maryland Global Campus) to offer online courses for academic credit decades earlier -- based on achieving “equivalent learning outcomes” and “when supervision is assured and learning is documented.” Subsequent federal requirements affecting financial aid, Title III, and the State Authorization Reciprocity Agreement (SARA) as well as regional and specialized accreditation standards require consideration for quality assurance and measurement of student activity and learning.

The problem for online or hybrid learning has always been that few traditional, F2F courses actually have documented student learning outcomes, which makes the task of assessing or comparing "equivalency" very challenging indeed. Without articulated and measurable learning outcomes, the default assumption may be that traditional F2F delivery is inherently “better,” which may be based (in part) on equivalent delivery measures of “seat time” or “contact hours” that can literally make alternate course delivery formats suffer by comparison. In other words, the burden of proof (and effort) can be even higher for re-designed online or hybrid courses if learning outcomes were never defined in their original F2F iterations.

The first step in designing any course is articulating what students should know, understand or be able to do after completing it. Measurable learning outcomes drive the course and pedagogical design of instructional activities and assessments. Moreover, as we reflect on how course design may impact student learning, clustering Quality Matters course design standards helps isolate themes for future research questions on

learning outcomes as well as retention, motivation, satisfaction, and more (Legon, 2015).

With the Pandemic pivot to remote instruction and online learning, it is likely that many online (and probably synchronous) courses did not go through a thorough articulation of learning outcomes either, which makes "equivalency" with asynchronous online courses challenging, as well. So, if we don't have the traditional notion of "seat time" or "contact hours" perhaps this will become replaced with “direct [synchronous?] instruction."

What's worse, given the scale of likely rushed, synchronous virtual learning in 2020, these could be the majority of courses on which people base their "online learning doesn’t work" sentiments. As such, online learning proponents may have won the battle -- to scale virtual learning in a crisis -- but be in jeopardy of losing the war to advance online learning as quality instruction and institutional strategic priority.

Second, without documented student learning outcomes across courses, let alone programs and degrees, it is difficult to connect and scale learning analytics to traditional student success metrics like final grades, term and cumulative GPA, credits attempted/earned, student retention and persistence rate, progress toward degree and 4- or 6-year graduation rates. While we may understandably assume that students who learn “more or better” in a course will eventually become successful graduates, how do we prove it, let alone intervene with students who we may project or even predict to be at-risk of not succeeding? Research from the Education Advisory Board (EAB) has shown that about 45% of students who drop out of college do so after their second year, and with a GPA between 2.0 and 3.0. (Tyson, 2014; Venit, 2016). These so-called

“Murky Middle” students leave college in “good academic standing” without a degree, the typical definition of “student success.”

For this reason, we have not only been working hard to define and align learning outcomes across course, program, college and the university -- thanks largely to our Faculty Development Center -- but also to integrate them into our institutional data warehouse strategy. Two initiatives in particular are worth noting: 1) our development of what is often referred to as the Comprehensive Learner Record (CLR), a digital record that can be used to document a student’s academic and co-curricular learning and accomplishments (*Comprehensive Learner Record*, n.d.; *Comprehensive Learner Record | IMS Global Learning Consortium*, n.d.; Shendy et al., 2019), and 2) a Learner Record Store (LRS), which is a learning/learner-specific data warehouse or data lake that can collect and curate massive amounts of student engagement data, not only in the LMS, but also from 3rd-party extensions, e-Textbooks, publisher homework systems and more (*Learning Record Store*, n.d.)

Ideally, we ought to be able to view any aspect of a student’s learner experience like an academic “core sample” of what is or could be occurring across the institution for similar peers. Imagine a student who initially struggled to understand the pH of a salt solution in general chemistry but eventually managed to demonstrate proficiency on a quiz, assignment or test: Did she read the open educational resource (OER) textbook? Take advantage of practice problems before midterm exam? Attend tutoring, supplemental instruction or even office hours? Is the student living on campus or is she a commuter? Is the course taught by an instructor who has sought training in active learning or online/hybrid course delivery? Are there other courses (perhaps pre-calculus

or English composition) that, when combined with general chemistry, are more likely to be associated with students who are retained in STEM degrees? Yes, this sounds like a "kitchen sink" of data and variables, but if we can link student learning outcomes to the digital footprints of the student learning experience, the courses they enroll in and the instructors who teach them, we may be able to help shine light on how quality course design can help students learn and succeed.

Finally, as UMBC's President Freeman A. Hrabowski likes to say, "If you want to change the culture, shine light on success, not failure." He's right, of course, and we need to define success, and look for it. When it comes to quality teaching and learning (online or otherwise), we have to start with the end in mind or "backward course design." What do we want students to know, understand or be able to do after completing a course? Not only what grades or credits did they earn. What did they learn, and what did this knowledge allow them to understand or do next? Better still, what should these learning outcomes be a year after completing the course? Now we're moving from a short-term memorization to perhaps changing how people think critically to solve problems or even create new knowledge.

However, since most faculty teach the way they were taught, and most weren't taught online, how do we give faculty the time and opportunity to learn a new mode of instruction or course delivery to achieve their desired learning outcomes for students? Consequently, as we shift from being forced online to perhaps choosing to do so, what does online learning quality *and* student success look like?

Yes, faculty will need to know the basics of how to use specific tools and technologies, and we might even create financial incentives like course development

stipends. But what we're really striving for here is helping faculty use technology to reflect on and express their pedagogy or philosophy of learning in ways that can best help students achieve their desired learning outcomes. In our experience, faculty learn this best from other faculty, which is why our PIVOT and all forms of instructional technology support and training relies so heavily on identifying, supporting and rewarding faculty peer mentors.

Here's where we can use learning analytics to help find and shine light on success in online learning precisely because our students and faculty leave digital footprints we can make inferences about, validate and even reverse-engineer as effective practices others might wish to implement. Yes, user activity data is an indirect proxy for engagement, but it's also a plausible and reasonable place to start. If we know someone who teaches in ways we wish others would consider, we can see if and how their students have been successful in the next course that follows or requires their own. Alternately, we might also be intrigued by patterns of student engagement in one course that differ significantly from other courses. In both cases, we can use the data as a starting point for a conversation or interview with the instructor to find out "what's going on in your course?" or "what are you doing that leads to your students' success?" In this way, we can find both effective practices -- and practitioners -- who we can support and "shine light on."

Conclusion

What would make online learning more of a priority for the institution going forward? How can we scale online learning quality? For most higher education institutions whose course offerings have been primarily in-person, this requires a

fundamental shift in institutional culture. Instructional design and integrating learning analytics are key but no amount of these improvements will bring about lasting change if faculty are not convinced of the value of online learning. In other words, we will need to work to win the hearts and minds of faculty by clearly showing the benefits of online education for the instructor and the students.

As Hrabowski, Rous, and Henderson (2019) point out in their book, *The Empowered University,* any proposed change at university that is perceived as top-down is likely to be dead on arrival for the faculty and staff who must implement it. Rather, the most effective ways to change the culture and practices of an institution is by clearly articulating a vision for the future through a collaborative process with others – faculty, staff, and administrators, and students - who broadly embrace it and developing colleagues who align with the culture, mission, and work.

Moving the hearts and minds of faculty requires a multi-pronged approach. A method that works well for one group of faculty may not work as well with another group. For example, showing the concrete benefits of participating in our PIVOT training – better student course evaluation scores reported for faculty who completed the PIVOT training than those who did not – may help in winning the hearts and minds of some faculty. For others, demonstrating how a thoughtfully designed online course promotes student engagement and success may do the job. Still for others, incentives can help. With our PIVOT initiative, we developed a faculty award program with funds from the Hrabowski Innovation Funds to recognize faculty who participated. But incentives are not always necessary. As Hrabowski et al. (2019) point out, passion is a characteristic that is found in the context of change. What successful change and innovation often

require are the people who lead. These leaders take the initiative, go “above and beyond” their normal work. There are obstacles, but they are passionate enough to move past those obstacles. We have been fortunate that UMBC has had more than its share of passionate and committed people who will roll up their sleeves and do the work. Our community is better for this broad set of leaders and our students have benefited substantially from their commitment.

A big part of the success of our PIVOT program has come from a close partnership between our Division of Instructional Technology, the Faculty Development Center, and our Colleges, all of which collaborated closely to facilitate faculty peer learning communities. Tapping peer mentors from throughout the university was also key to the success of this program because faculty often learn best from other faculty. Many of our faculty peer mentors are full-time lecturers, but we have also been thrilled to hear some of our senior tenure-track faculty share that their teaching has benefited markedly from the peer learning communities. Senior faculty play a critical role in shaping departmental expectations for reviewing the performance of junior faculty, and we are seeing a shift in faculty’s attitude toward online instruction more broadly.

It takes concerted effort over time and continuous vigilance to sustain these culture changes. We need to continuously monitor progress to ensure that it endures and when new people join our campus community, be sure to educate them about our culture and approaches. Change is hard and success is never final. But we can win the hearts and minds of our community members one person at a time.

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