



Blended learning: A dangerous idea?

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ABSTRACT

The authors make the case that implementation of a successful blended learning program requires alignment of institutional, faculty, and student goals. Reliable and robust infrastructure must be in place to support students and faculty. Continuous evaluation can effectively track the impact of blended learning on students, faculty, and the institution. These data are used to inform stakeholders and impact policy to improve faculty development and other support structures necessary for success. This iterative loop of continuous quality improvement is augmented by faculty scholarship of teaching and learning research. The evolution of blended learning at the University of Central Florida is used as a model and research collected over sixteen years illustrates that with proper support and planning, blended learning can result in positive institutional transformation.

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1. Introduction

Blended learning is a dangerous idea (Seife, 2000) in that it challenges the status quo, maintaining the integrity of the traditional academy while simultaneously encouraging the adoption of platforms such as online learning, mobile technologies and resources that exist in the cloud. By most standards, blended learning is a mechanism that bridges the old and the new by impacting policy and strategic initiatives in higher education at virtually every level. For instance, in a recent study, the U.S. Market for Self-Paced Learning Products and Services predicted a precipitous drop in the percentage of higher education students taking traditional face-to-face courses in favor of blended and online modalities (Ambient Insight, 2011). That finding is not unexpected given the current use of instructional technologies for developing new learning environments. However, the magnitude of that forecast is noteworthy: a 71% decline from 14.1 million in traditional course enrollment in 2010 to 4.1 million five years later. If this prediction is correct, it has monumental policy implications for America's colleges and universities. In the early 1990s, the emergence of online learning as the progenitor of the transformation in higher education spawned many predictions of the demise of the traditional academy. As a result, many for-profit initiatives ultimately failed because of faulty assumptions about the

nature of the potential student population and overestimates of potential markets (Keegan et al., 2007).

As online higher education programs began their rapid growth they created a dynamic tension, spawning ambivalence in some sectors of higher education. A positive side effect of that tension included new learning environments that offered potential for maximizing the effectiveness of contemporary teaching and learning. That movement assumed various labels such as mixed mode, hybrid, and combined, but blended learning emerged as the dominant label for an educational platform that represents some combination of face-to-face and online learning.

The next phase of the process became obvious: a scramble to develop an operational definition that would describe blended learning in a manner that would gain universal acceptance and provide a firm foundation for educational policy planning. The early attempts were entirely predictable. What arbitrary mix of face-to-face and online learning would constitute blended learning (60–40, 70–30, 50–50)? There are virtually unlimited possible combinations, each one no more or less valid than all the others. Ultimately, these deliberations sought to identify the threshold that defines blended learning. Interestingly this approach is akin to identifying cut scores on examinations, with all the inherent problems (Chang, Dziuban, Hynes, & Olson, 1996).

The educational community, in trying to accommodate policy decisions for their institutions about blended learning, realized that context plays a vital role for construction of a workable definition. Characteristics of the student population, mission of the institution, the strategic planning processes, faculty responsiveness, student acceptance, community values, available resources, institution support mechanisms and many other components helped frame blended learning in a way that made sense for a particular institutional

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context. As a result, many institutions, in dealing with policy decisions, came to accept that blended learning is a much more useful construct when considered a mental model. Senge (1990) define mental models as internally held images of how the world works in a generalized sense that is highly influenced by the context in which one operates. Therefore, a mental model of blended learning is much more conceptual than a formalized working diagram of how it should be accomplished. Jarred Diamond (1997), in documenting monumental breakthroughs for societies, speaks to mental models without actually identifying them as such. He documents that ideas disseminate and are adopted in two ways: blueprint adoption or idea transmission. Blueprint adoption means that one culture subsumes the methods of another exactly as discovered, for instance, written language. Blueprint adoption for blended learning would mean that one university implements the method exactly as observed in another institution. This is an extremely rare event in higher education because institutional contexts vary so greatly. Idea transmission happens when a culture observes a phenomenon in another society and decides to adopt that idea but develops its own methods for implementing it. For instance, a culture observes written language used by its neighbors finding the idea attractive but develops its own written symbols and methods. Blended learning develops across institutions according to their unique characteristics contributing to policy decisions that make sense to them through an idea transmission model.

Given this evolution, formulations of blended learning emanated from many entities that have responsibility for educating and training their members. Blended learning models may be found in higher education (Kaur & Ahmed, 2005), industry (Executive Conversation, 2010), K-12 education (Keller, Ehman, & Bonk, 2004), the military (Bonk, Olson, Wisner, & Orvis, 2002) and in many other sectors. There are formulations based on organizational infrastructures (Khan, 2001) that concern themselves with such things as development time, program combinations, cost factors, multiple locations and institutions, and landscape considerations. Learning environment approaches (Norberg, Dziuban, & Moskal, 2011) foster such issues as interaction, constructivism, communication, learning communities, learning enhancements, cognition and performance support, as well as synchronicity. Added value constructs (Graham, 2006) deal with elements such as enhancement, presence, access, reusability, transformation, replacement and process emphasis. Graham (2006) uses this approach to define enabling blends that increase access, enhancing blends that incrementally improve pedagogy, and transforming blends that create fundamental paradigm shifts. Mayadas and Picciano (2007) took the notion one step further coining the term “localness” as an amalgam of locations, courses, and course modalities (blended, online, face-to-face, and lecture capture) affording students the opportunity to avail themselves of comparable educational opportunities whether they are on campus, near campus or far from campus by blending those elements. All these approaches are definitional in some respects but differ in their emphasis. Most of them assert that blended learning offers potential for improving the manner in which we deal with content, social interaction, reflection, higher order thinking and problem solving, collaborative learning, and more authentic assessment.

Ultimately, blended learning has become an evolving, responsive and dynamic process that in many respects is organic, defying all attempts at universal definition. The bad news is that it frustrates the search for specificity. The good news is that its flexibility permits individual institutions and collaborative groups to tailor the concept to maximize its potential while being responsive to a new generation of students. Blended learning can increase access within the scope of existing resources while maintaining or enhancing quality. In many instances, it can improve return on investment. In addition, it can increase opportunities for faculty members to design more effective teaching and learning environments. This approach has potential for fostering a much more reflective student population and extends learning far beyond the boundaries of traditional classrooms.

2. Operationalizing blended learning

With so many blended learning models in existence, which might be the most effective, or the most appropriate for a particular institution to choose? The answer might seem surprising, or at least counterintuitive: there is no singular best model, and most institutions can achieve success with nearly any of them. The mode of delivery has a very weak statistical correlation with student success or persistence (Dziuban & Moskal, 2011). Rather, a set of institutional variables has come to be accepted (Stacey & Gerbic, 2008) as critical success factors for blended learning and fully online initiatives. These variables are drawn from institutions that have achieved success in the online environment over more than a decade of practice. They are described here with a caveat, however. Innovations play out within the culture and climate of each institution and therefore have to be tuned to the institution's dynamics. There is no “one size fits all” approach that is guaranteed to succeed, nor does success come quickly, but rather is achieved through continuous effort over a span of several years.

2.1. Institutional goals and objectives

Success is goal attainment. For an institution to succeed in blended learning it must have a sense of what goals and outcomes it wants to achieve. These may be institutional goals, faculty goals, or student goals—preferably a combination of all three. Institution-centered goals might include more efficient use of classroom resources, or extending campus outreach. Faculty-oriented goals can include improved teaching through faculty development and adoption of innovative, student-centered teaching practices. Examples of student goals are increased convenience and flexibility, expanded access, greater student academic success, or enhanced information literacy. An initial blended learning strategy might consist of the answers to a set of questions like these:

1. Why should the institution engage in blended learning? What are our goals, and what outcomes do we expect to achieve, both initially and longer term?
2. What student benefits do we seek—improved success, increased persistence, shortened time-to-degree, etc.?
3. What courses or programs will we offer in a blended format, and why?
4. How will we engage and support our faculty in order to make them successful?
5. How will we roll out blended learning throughout the institution? Where do we begin?
6. What levels of investments are we prepared to make and what returns do we expect?

2.2. Alignment

The institution's senior executives must play a key role in formulating goals and objectives for blended learning, as is their right and responsibility. But those goals cannot be the exclusive purview of senior leadership. The faculty must also have a stake in the initiative and its success, and the goals established must ultimately be acceptable to them because blended learning is ultimately all about teaching and learning. Deans and department chairs also need to see how their respective college goals and their academic programs harmonize with the institution's strategy. In short, the goals of both administrators and faculty members must be in alignment if a blended learning initiative is to succeed.

Institutional alignment can be challenging to achieve because many administrators are not familiar with this mode of teaching and learning, having not experienced it during their own education. As a result, they may find it inherently difficult to link blended learning with

institutional strategies and success. Faculty members tend to be suspicious of top-down initiatives that impact teaching and learning, and they likely harbor initial concerns about the quality of online education and intellectual property ownership. Institutional alignment cannot be achieved without dialog. The brief history of online learning is littered with the carcasses of initiatives in which gaps in understanding between administration and faculty were never satisfactorily resolved.

2.3. Organizational capacity

As important as institutional goals and alignment between administration and faculty can be, they are insufficient to begin or sustain a blended learning initiative. The missing component is the mid-level organizational capacity required to prepare faculty, develop courses, manage the infrastructure, support online students and teachers, and carry out the myriad other functions that are needed to attain success.

The debate over where to place the support resources—centrally or within academic units—continues, but over time is tilting strongly toward centrality in order to avoid duplication and redundancy, and maintain quality and consistency. Developing a blended (or fully online) learning support organization can be challenging. The range of professional skills needed to design and develop blended courses, create and deliver faculty development, produce instructional media content, conduct assessment, and partner with academic units to develop blended courses or programs is greater in scope and depth than exists at most institutions. Or, if these resources do exist, they may cross departmental or divisional boundaries. This leads to three general approaches: create a new blended learning support unit that is appropriately resourced, expand an existing unit to fill out the range of required skills, or merge existing units and fill in where needed.

The development of institutional capacity to launch and sustain a blended learning initiative requires resources, time, and patience.

There is no standard organizational model that describes online learning support units. However, one essential element is the instructional designer. Employing instructional designers to create and deliver faculty development and partner with faculty members to develop online courses is generally accepted as a path to higher levels of quality and consistency than models that do not include instructional designers.

2.4. A vocabulary and definitions

Planning and implementing an online learning program requires the engagement of many stakeholders, and extensive deliberation about every element. If a campus conversation is to take place, there must first be a vocabulary. What course modalities will be employed? What will they be called, and what are the associated descriptions? Does the initiative itself have a name? The specific terms chosen are relatively unimportant, although it may be helpful to choose among those that are in common use (e.g., “blended learning,” “hybrid learning”). What is fundamentally important is to engage campus constituencies in the conversation so that they become familiar with the language, concepts, and methods.

It is a useful idea to develop narratives about online learning that are customized for each constituency. There can be narratives for faculty members, department chairpersons, deans, provosts and presidents, and board members. Although the specific discussion points may differ among the various narratives, they must all be consistent in their respective foundations. Readers of Peter Senge (1990) will recognize this as the creation of mental models that support learning organizations, as described in his “The Fifth Discipline” and subsequent works.

2.5. Faculty development and course development support

We take it as a given fact that faculty members are experts in the subject matter they are teaching. The goal of faculty development is to ensure that online courses are designed and delivered in a manner that leads to expected levels of student learning, mastery, and success in the online environment. These expectations are typically normed against student performance in similar face-to-face classes. Faculty development also provides a forum to introduce faculty members to important issues such as copyright, accessibility, more effective methods of assessment, and other matters they may not have previously encountered.

The course development process is intended to create an online learning environment that successfully embodies the design goals established during faculty development. It is also an opportunity to explore the use of various media to implement course objectives. Beyond basic Web pages, graphics, sound, video, animations, and other learning resources can be created to enrich the learning environment and engage students. At the end of the initial development process, the course should be reviewed by the faculty member and instructional designer and approved for first use. Some institutions use a rubric and engage other faculty members in a process to review and approve new online courses for deployment; some periodically review and re-approve existing courses.

Effective faculty development and course development support reduce the faculty member’s workload, leading to courses with improved design, richer student engagement, more contextual and authentic assessments, and improved student outcomes (Dziuban, Hartman, Cavanagh, & Moskal, 2011).

2.6. Support for online students and faculty

Online students and faculty members can engage their online courses at any time of the day or evening. Many may be residing at a distance from the campus. Student or faculty support issues can be as simple as a password reset, a question about a feature of the course management system, or deeper subjects such as course content or an assignment. Support for online students and faculty members can take many forms: live telephone support, voice mail with call-back, email, instant messaging, informational Websites containing documentation or tutorial videos, or walk-in centers. Alternatively, institutions can outsource support to a company that will provide the service for them. Most institutions with mature online learning programs use multiple of these options, recognizing that when assistance is requested the need is likely immediate. Hours of online learning opportunities can be blocked by something as simple as an expired password.

2.7. Robust and reliable infrastructure

Blended learning requires the same IT infrastructure elements as other network services: servers, network bandwidth, and remote access. However, the requirements of online learning are more stringent in terms of reliability and consistency of performance than many other network services, requiring that the technical elements be well designed and supported. The complexities of course management software and supporting infrastructure require continuous attention, requiring dedicated technical personnel.

When students and their instructors enter a classroom at the assigned hour, they have every reason to expect that instruction and learning will take place. Classroom-based instruction is a very reliable delivery system. That expectation extends to the online learning environment as well, and when a student or teacher logs in to a course Website they expect to be able to engage the content and resources as needed. The complexities of course management systems, network connections, residence bandwidth levels, and even versions of software

installed on students' computers can make classroom-level reliability difficult to replicate. There are many moving parts.

At many institutions, adoption of online learning grows at double-digit annual rates, and there are times of the year—such as midterms and final exams—when the user load on the course management system may be many times greater than at normal, non-peak times. Data storage demands also increase at a rapid pace. For these reasons, institutions should plan carefully with their vendors to ensure they deliver sufficient capacity and reliability to meet student and faculty needs at all times, and that they have a scalability plan to grow their infrastructure as usage and demand increase.

2.8. Institution-level, longitudinal data collection and assessment

It is natural for questions about online learning to emerge: “Do students learn as well as in the classroom? Are faculty members and students satisfied with their online learning experience? Do blended learning courses produce better outcomes than fully online courses? Is our blended learning initiative improving over time? At what rate is it growing? And what is our return on investment?” These and myriad other questions will inevitably be raised in conversations about blended learning. If the institution cannot bring data to the table, it is likely that these questions will be decided by anecdote.

One of the most important steps an institution can take when it begins a blended or online learning program is to establish structures for central, longitudinal data collection for purposes of tracking and assessment. These should include both formative and summative data, and should include both quantitative and qualitative factors. Generating rich data sets over time allows an institution to track the impact of blended learning on students, faculty members, and the institution. In the beginning, the data help answer questions like “does it work” or “is it as good as other approaches?” Later, the data will help the institution embark on a path of continuous quality improvement. At maturity, the data collected, along with engaging faculty members in action research, can take on characteristics of the scholarship of teaching and learning (SoTL), establishing a potential connection between innovative teaching practices and faculty qualification for tenure or promotion.

2.9. Proactive policy development

The time to develop policies around blended and online learning is before issues or concerns arise and fester until they become rallying points for faculty resistance. The policy areas that typically need to be addressed at the inception of a blended learning initiative are intellectual property ownership, copyright, and workload. Often, these matters are covered by existing institutional policies or contracts, which may need to be updated to cover the specific conditions brought to bear by blended learning.

One of the most sensitive aspects of building a successful campus online learning initiative is garnering willing faculty participation. Initially, nearly all faculty members have questions about matters such as quality, control, recognition, reward, intellectual property ownership, and workload. Pursuing these success factors facilitates the engagement of faculty members, and over time helps to alleviate their concerns, especially when the institution has generated its own assessment data. In early stages of adoption, the primary faculty detractors are often those who have not engaged in blended learning or whose initial online experiences were not positive. It is therefore important to engage successful online faculty prominently in the policy development processes.

2.10. An effective funding model

Is blended learning an expense, or an investment? The answer lies in the institution's perspective on what it wants to accomplish. In

these difficult financial times, the ability—or even the desire—to commit funding to a new delivery model may not be present, especially if the institution has not thoroughly thought through its strategic rationale for doing so. Thinking of blended learning as an investment rather than a cost might lead an institution to ask questions like: “What would it be worth to the institution to...”

- improve teaching practices through increased faculty development?
- make more efficient use of classroom resources?
- provide more convenient and flexible learning opportunities for students?
- grow enrollments through increased access?

Over the span of thousands of online courses and participating faculty members at numerous institutions, these “input” issues are observed to become less significant predictors of faculty satisfaction over time than the outcomes that faculty can achieve in their blended and online classes: more active student learning, active participation and interaction by a greater proportion of students, more flexibility in the use of time and space, and a sense of accomplishment for mastering new tools and techniques.

The above success factors are intended to be suggestive rather than prescriptive. There are no hard and fast standards and flexibility is important, so long as there is a shared understanding of the boundaries of quality.

3. How data inform policy and practice

The call for this special edition contained the following statement, “For example, satisfaction and achievement appear to be higher in blended courses as compared to traditional face-to-face and fully online courses.” A large body of evidence supports this contention (Means, Toyama, Murphy, Bakia, & Jones, 2009) and corresponds to nearly two decades of large sample research on student satisfaction, success and withdrawal in blended courses at the University of Central Florida. The first important finding documents a growing sense of agency in the student population, finding them using what Steven Johnson (2010) termed a “liquid network” for sharing their beliefs about the quality of their blended learning experiences. According to Johnson, liquid networks are agile enough to be flexible but structured enough to be reasonably stable. Students express their satisfaction, or lack thereof, through social networks of all kinds, social and fraternal organizations, student publications and the ubiquitous end of course student evaluation of instruction (SEI) survey (Wang, Dziuban, Cook, & Moskal, 2009). More often than not, responses to the end of course surveys become available to the student population at large, having a substantial impact on instructor reputation and course selection. These instruments take on a prototypical format very much like the one in use at the University of Central Florida (Appendix A). Typically these surveys culminate with an overall student rating of the course, a response that appears to be the primary student index for gauging the quality of a course and its instructor. Although recent research by Dziuban and Moskal (2012) shows that student satisfaction is much more complex than one might assume and that student ambivalence is a primary component in the dimensionality by which students evaluate blended courses, the overall rating still serves as an important indicator of course quality, as perceived by students.

Administrators responsible for policy decisions at UCF have come to appreciate the value of gauging student satisfaction with blended and other course formats for informing effective practice. Satisfied students create a positive climate by increasing demand and impacting program planning. Conversely, dissatisfied students depress demand and create an equal but compensatory impact on strategic decisions. Students' satisfaction plays an important role in curriculum planning, faculty development, building programs, hiring, faculty rewards, and the tenure and promotion process. This sense of agency not only results in multiple

modes of expression about quality but empowers students with the knowledge that they have a choice for obtaining an education. Most assuredly, traditional universities are no longer the only game in town and they have come to realize that customary methods of teaching are being scrutinized more closely than ever before (Ambient Insight, 2011). Given these developments, UCF has devoted considerable time and resources attempting to understand student satisfaction, and success and withdrawal in order to determine what characteristics of courses (including blended learning) define that elusive phenomenon called excellent teaching. The university has pursued this line of research in the belief that better understanding of students in contemporary society will be a value added component in the policymaking process. This has proven to be the case. The following data have been invaluable for understanding the blended learning phenomenon as it impacts policy decisions.

3.1. Students' satisfaction with their learning experience

Table 1 presents the overall percentage of excellent course ratings at UCF for over one million student responses for the academic years 2008–2011 indexed by course modality.

One may observe a three tiered rating structure with the blended modality enjoying the highest percentage (52%) of “excellent” responses producing a 4% marginal advantage over online and face-to-face courses that are tied at 48% followed by lecture capture formats that rank approximately 10% below the blended courses in student satisfaction. From a policy perspective it seems clear that blended courses yield positive learning climates when compared to other modes of instruction. Given this finding, UCF examined identifying decision rules that would predict the course (and instructor) characteristics that lead to an overall excellent rating. In approaching this problem, the university used the data mining method of classification and regression tree analysis (Breiman, Friedman, Olshen, & Stone, 1984) to determine decision rule models for the overall rating. The variables used for prediction were course level (lower undergraduate, upper undergraduate and graduate), college membership, and the other 15 items on the end of course rating instrument. From that analysis, clear rules emerged the strongest of which appear in Table 2.

Table 2 shows that only three items on the survey instrument were required to form an effective prediction model. If students assigned an excellent rating to the instructor's ability to facilitate learning, his or her communication skill, and his or her respect and concern for students, then the probability of their assigning an overall rating of excellent to their learning experience approaches 1.0 (.97). Note that course levels and college membership did not contribute to the model, making the rule essentially independent of those two characteristics.

If one were to harvest all the students who conformed to the rule and then examine them by each of the learning modalities, the result would be found in Table 3.

Table 3 demonstrates that irrespective of the course mode through which students learn, if the instructor facilitates learning, communicates well, and respects his or her students then they will be rated excellent.

Table 1
Excellent ratings by course modality (n = 913,688).

Course modality	Overall % excellent
Blended	52
Fully online	48
Face-to-face	48
Blended lecture capture	43
Lecture capture	42

Table 2
Decision rule for the probability of faculty member receiving overall rating of excellent (n = 1,280,890).

If...	Excellent	Very good	Good	Fair	Poor
Facilitation of learning	*				
Communication of ideas	*				
Respect and concern for students	*				
Then...					
The probability of an overall rating of Excellent =	.97				
The probability of an overall rating of Fair or Poor =	.00				

Table 4 provides further validation of that finding.

UCF conducted a hierarchical logistic regression analysis predicting the variable *overall excellent rating* or not, using cumulatively: class size, class level (lower undergraduate, upper undergraduate, graduate), college membership, department membership and the three items identified in the previous rules. The analysis shows that virtually no predictability is achieved from the demographic characteristics associated with students. However, when the three items in the rule are added to the equation, 79% of the variance in excellent ratings is predicted. The pseudo R² of .79 equated to a multiple correlation of .89. From a policy perspective these data are compelling. The three characteristics of instructors (note that they are characteristics of instructors not courses)—facilitation, communication and respect—are issues that lend themselves to faculty development. Therefore, in deciding where to invest limited resources for improving pedagogy and the learning climate the student satisfaction rules provide a guide that might well lead to a measurable impact.

3.2. What about student success and withdrawal in blended courses?

Table 5 provides a final piece of evidence that compliments and extends the student satisfaction data: the question of success in various course modalities.

Success is a complex and difficult outcome to define and measure, but progress from course to course across the curriculum might well be considered one measure of students' success within the academy. To be sure, in many instances luck has a great deal to do with what our society commonly views as being successful and, unfortunately, that appears to be for the most part completely unpredictable (Taleb, 2007). However, if one were to scale grades as achieving an A, B or C that index would ensure that students stay in school and eventually complete their degree. By conducting a large scale analysis of success and withdrawal for the course modalities identified in the satisfaction portion of our data, two compelling findings emerge. Across the university, Web-based blended courses yield the highest success rates (90.8%) producing an approximately 6% advantage over blended lecture capture classes. The inverse trend emerges when one examines the withdrawal rates showing that students in blended courses tend to withdraw at approximately half the rate (2.8%) than they do in lecture capture courses (5.3%).

Table 3
Excellent ratings by course modality (n = 913,688).

Course modality	Overall % excellent	If rule 1 % excellent
Blended	52	97
Fully online	48	97
F2F	48	97
Blended lecture capture	43	97
Lecture capture	42	97

Table 4
Hierarchical logistic regression (n = 30,080).

	R ²
Class size	.002
Class size, level	.008
Class size, level, college	.032
Class size, level, college, department	.066
Class size, level, college, department, facilitation of learning	.695
Class size, level, college, department, facilitation of learning, communication of ideas	.765
Class size, level, college, department, facilitation of learning, communication of ideas, respect and concern for students	.785

The long term data that UCF has accumulated on student satisfaction, success and withdrawal in blended courses proves instrumental in making policy and practice decisions about such issues as

1. What topics should be included in faculty development initiatives?
2. What kinds of research in the scholarship of teaching and learning would be most beneficial to the students, faculty members and university?
3. When developing new or reengineered programs, what course modalities could be most effective?
4. From which modalities might students be most likely to withdraw?
5. What would be the most effective apportionment of limited and diminishing resources?
6. What kind of university do we want to be two decades from now?
7. How shall we deal with or accommodate the new sense of student agency and empowerment?
8. How will effective leadership emerge in the coming decades?
9. And, of course, what are the many unforeseen policy issues that will emerge in the coming years?

4. The move to blend

The growth of fully online courses is well documented (Allen & Seaman, 2011; Johnson, Smith, Willis, Levine, & Haywood, 2011), but the notion of blended learning is still finding its place in the educational landscape. Universities are struggling with defining blended learning as well as implementing this hybrid modality. Intuitively, courses on the extremes—face-to-face and fully online—seem easier to navigate, both from an institutional and instructional standpoint. But, how best to “blend” becomes an enigma for many faculty and their institutions.

Blended courses can certainly be used to help meet the needs of students, faculty, and the institution. For students, these courses

Table 5
Success and withdrawal rates by modality.

Success by modality		
Modality	n	Success (%)
Blended	69,436	90.8
Fully online	188,776	88.3
Face-to-face	839,028	87.7
Lecture capture	16,354	83.9
Blended lecture capture	45,213	84.7
Withdrawal by modality		
Modality	n	Withdrawal (%)
Lecture capture	18,037	5.3
Fully online	188,916	4.3
Face-to-face	933,846	3.1
Blended lecture capture	55,665	3.0
Blended	70,045	2.8

offer flexibility both in time and space. Students are positive about the reduced logistic demands afforded to them when actual face-to-face class time is minimized. The online elements of blended courses can be shifted to fit into students' busy lifestyles, allowing them to complete asynchronous components on their own time and in their own space, whether at home or in the campus coffee shop. Paradoxically, while this flexibility is maximized with fully online courses, students lament having no face-to-face experience in those courses (Dziuban et al., 2011; Dziuban, Moskal, Bradford, Brophy-Ellison, & Groff, 2010)—a challenge that is ameliorated with the blended mode. Perhaps this need for face-to-face interaction is one of the reasons our students pepper their schedules with a combination of modalities, so that they can obtain flexibility in their educational landscape, while still maintaining the campus, faculty, and student interaction they crave.

Faculty indicate a similar affinity to the blended mode, indicating it is the “best of both worlds.” Some utilize this modality as a way to explore teaching in the online environment, becoming familiar with the course management system as well as technological and online resources, while navigating the change in role that comes with facilitating asynchronous components. Yet, through blending faculty still having a face-to-face presence with students. The convenience of fully online education is partially provided, while allowing for those instructional interactions that some faculty feel are necessary to complete in a face-to-face classroom setting (e.g., labs, hands-on collaborative work, or assessments). Universities can utilize blended courses as a means to maximize utilization of classroom space with the reduced seat time component. In these economically difficult times, funding for additional classrooms is often scarce, yet enrollments continue to grow. Blended learning can help provide access to students by allowing multiple courses to occupy the classroom space previously occupied by one face-to-face section.

Whatever the motivation to blend, it is clear that the strategy works best when clearly aligned with the institution's mission and goals and the needs of students, faculty, and institution are simultaneously addressed. There are many models for blended learning, and it is clear from the literature that these modals involve a complex mix of variables that are based at least in part on the culture, resources, and instructional philosophy of the institution and educator. As the authors have stressed in this paper, a clear vision and strong support are necessities when moving to the blended environment. Only then can this modality not just succeed, but become a transformational force for the university (Dziuban et al., 2011).

At UCF, the vision for blended courses began in 1997, after a realization that three quarters of the students in an initial “distance learning” cohort resided on campus. Blended learning has become a significant part of our campus landscape, with more than 14% of student credit hours from those courses with reduced seat time web and face-to-face components. The current success of UCF's blended learning initiative is evident from high success rates and low withdrawal (equal to or better than those seen in face-to-face courses), as well as high student and faculty satisfaction. These grow from a strong institutional commitment to provide the essential resources for faculty development, student and faculty support, and iterative evaluation which serves as a method for continual improvement of the initiative (Dziuban, Hartman, & Moskal, 2004; Dziuban et al., 2011). The need and the benefit of a strong vision and support are well documented by UCF's 16 years of distributed learning impact evaluation, examining the impact on students, faculty and the institution (Dziuban & Moskal, 2011; Dziuban et al., 2010; Wang et al., 2009).

5. Scaling beyond the university

UCF's award-winning program (Center for Distributed Learning Awards, 2012) has become a model for others who are embarking on the blended journey and looking for a road map to success. UCF

has a steady stream of national and international visitors from other universities, colleges, community colleges and others, as well as invitations to speak to faculty and administrators as other institutions from around the world gather information on UCF's success and challenges in successfully maneuvering the blended learning landscape. The obvious question would be how can we effectively disseminate UCF's resources and knowledge so that others might learn from our experience as they scale up their own campus blended learning initiatives?

The opportunity came in 2010, with the announcement of the Next Generation Learning Challenges (NGLC) program. The NGLC program, sponsored by the Bill and Melinda Gates Foundation, in partnership with EDUCAUSE, The Council of Chief State School Officers (CCSSO), The International Association for K-12 Online Learning, The League for Innovation in the Community College, and The William and Flora Hewlett Foundation, is “a collaborative, multi-year grant program aimed at dramatically increasing college readiness and completion through applied technology.” (Next Generation Learning Challenges, 2012) Wave I funding focused on technology applications with the potential to improve postsecondary education, with a preference given to programs targeting low-income students. Four focus areas were earmarked: blended learning, deeper learning and engagement, open core courseware, and learner analytics (EDUCAUSE, 2010).

Sixteen years of successfully implementing and evaluating blended learning inspired UCF to apply for an NGLC grant, capitalizing on our experience and lessons learned in implementing blended learning on our campus. In 2011, the joint UCF and American Association of State Colleges and Universities (AASCU) proposal, *Expanding Blended Learning Through Tools and Campus Programs: A UCF/AASCU Project* became one of the Wave I funded efforts to attempt to successfully scale blended learning beyond our campus boundaries.

How to scale the UCF experience to others was the challenge. Through the NGLC grant, UCF was able to disseminate the learner-centered pedagogical principles at the heart of our successful online and blended faculty development and create course materials and resources to help provide faculty with a game plan for course redesign—based on time-tested and proven strategies. Capitalizing on the AASCU network of colleges and universities, we sought institutional partners with the motivation and desire to adopt blended instruction, providing the institutional commitment necessary for support and (hopefully) success. Fig. 1 lists the partners who were selected to participate in the Wave I project. In addition to individual partners, statewide consortia participants in Missouri, Alabama, and Minnesota also participated, led by a coordinating institution.

The project developed the Blended Learning Toolkit shown in Fig. 2 (Blended Learning Toolkit, 2012), which provides:

- Blended learning best practices, strategies, models, and course design principles,
- Composition and Algebra prototype blended course templates as open educational resources (OER).
- Guidelines for utilizing the resources to create blended courses other than composition and algebra,
- Train-the-trainer resources for developing and delivering the prototype open courses as well as general guidelines for blending any course
- Evaluation protocols, including surveys and guidelines for conducting research.

UCF math and English faculty members conducted train-the-trainer workshops for discipline-specific faculty to accompany the prototype course materials freely available to participants, while the BlendKit workshop and course materials provided generic blended redesign guidelines. All of the materials distributed through the grant are open source under a Creative Commons Attribution-NonCommercial-ShareAlike license with each institution developing their own courses, bound by the intellectual property policies at their respective campuses. Support for math and English faculty continued beyond the training, with resources and sample materials available via the training site established in CourseSites (CourseSites, 2012) and faculty available for assistance as needed while participating schools developed and began to administer their courses in both fall 2011 and spring 2012.

The interest in resources related to developing blended learning course materials has exceeded the expectations of scale of the NGLC participants both in terms of the number of institutions receiving funds to support faculty, and those who voluntarily chose to learn about blended learning design through BlendKit 2011. Fig. 3 shows the magnitude of formal NGLC participants and those who have utilized the BlendKit training or materials in some fashion within the U.S. There were additional participants in Canada and worldwide who also participated in the BlendKit training.

UCF's distributed learning impact evaluation methodology is being used as a model for measuring not only the scale of blended learning adoption by participating schools, but also for gathering data on student success and withdrawal rates, student satisfaction, and faculty satisfaction. With the NGLC project completion, data will have been collected from more than 20 participating schools and their students and faculty. Results from this project will hopefully

Individual Institutions	State Coordinating Institutions	State Participating Institutions
Columbus State University	<u>Missouri</u>	Harris-Stowe State University
Fayetteville State University		Lincoln University of Missouri
Grambling State University		Missouri Southern State University
Northwestern State University(LA)		Missouri State University
Indiana University Kokomo		University of Missouri-St. Louis
Texas A&M University-Corpus Christi	<u>Alabama</u>	University of North Alabama
The College at Brockport, State University of New York	Troy University	University of South Alabama
Thomas Edison State College	<u>Minnesota</u>	St Cloud State University
University of Maine at Fort Kent	Winona State University	

Fig. 1. Participating schools.

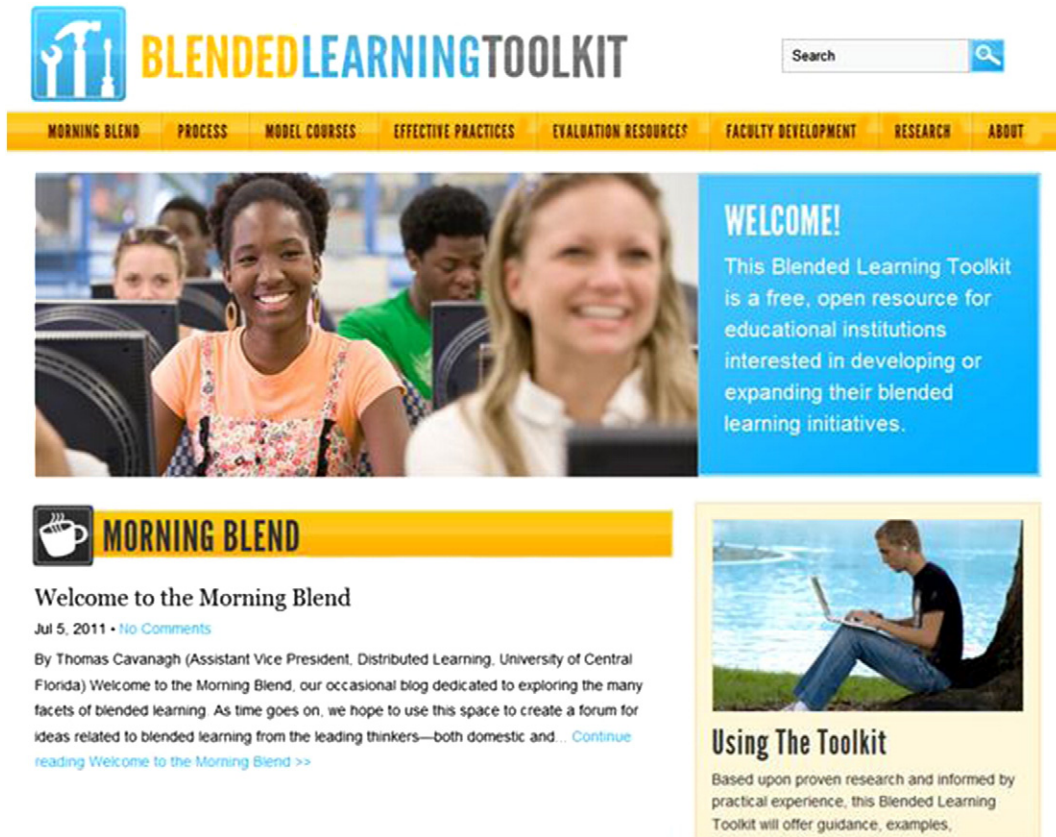


Fig. 2. Blended Learning Toolkit front page.

provide valuable information in terms of how to scale blended learning to many campuses and present lessons learned on a variety of issues, challenges and successes that come from a rapid dissemination of ideas.

6. Conclusion

Because blended learning intersects with almost every sector of the university environment, it demands careful policy development

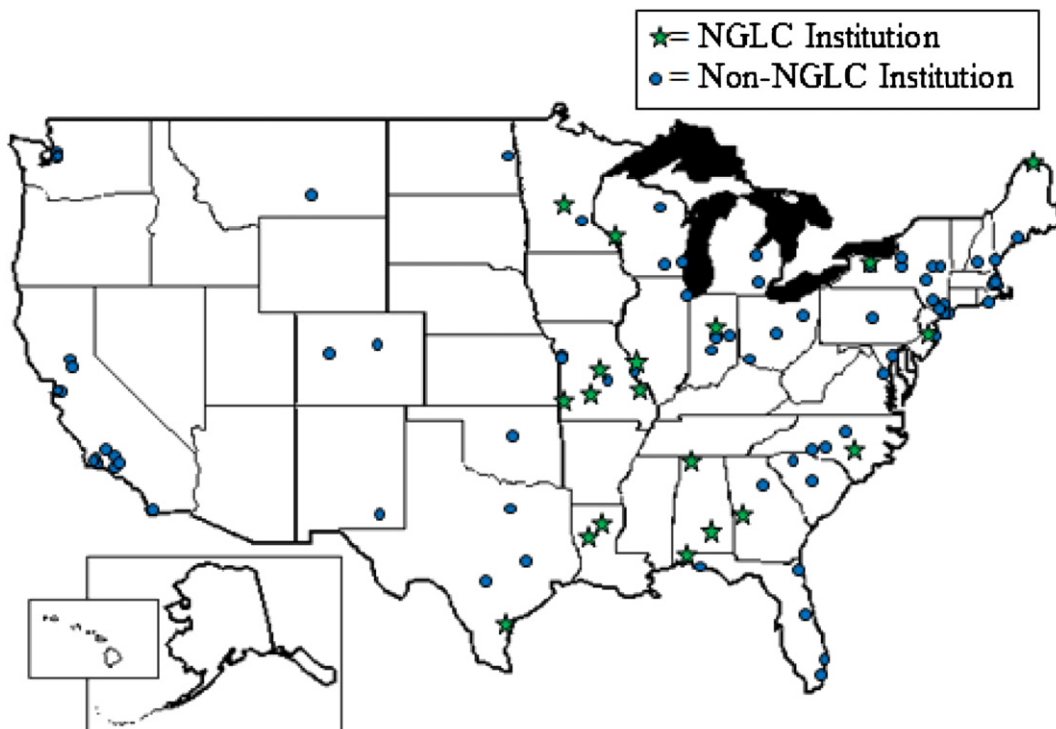


Fig. 3. Participating schools map.

and execution. Administrators must consider the modality for its impact on infrastructure needs, program development, and strategic planning. Faculty members have the opportunity to capitalize on its potential for enhancing their ability to facilitate learning more effectively. Students must reexamine their assumptions about how they will navigate the educational system and just what will be required of them in this environment that represents the confluence of technology and face-to-face learning. Blended learning casts a very wide net, forcing us to reexamine the storied assumptions about teaching and learning that we have clung to for such a very long time. Simultaneously, it is disruptive and empowering.

In this article, the authors have outlined a number of considerations for blended learning that impact policy in higher education. First and foremost, this learning modality must be operationalized in a manner that resonates with the context of the institution and aligns with its goal and objectives while at the same time maintaining consistency with organizational capacity. Blended learning requires high quality support at all levels: organizational infrastructure, course and faculty development, as well as consistent student learning support mechanisms. All these elements must play out in an institutional culture that is both responsive and reliable. Obviously, these elements require adequate investment of resources. However, with that investment comes with the need for an effective evaluation process—one that provides information that facilitates effective decision making at both the policy and instructional levels.

Finally, the overriding question in all of this is one of scale. From a policy perspective the primary consideration becomes can blended learning scale across the institution, across the state, across the region and across the country. The authors provide data that suggest there is an affirmative answer to each of those questions. Scale is indeed possible with the associated opportunity costs involved in resource reallocation, transformation and control. However, the benefits far outweigh the costs: higher quality learning, improved teaching, increased access and opportunity, authentic assessment, maximized resources, improved student success and satisfaction, improved return on investment, increased faculty satisfaction, reduced withdrawal rates and a better sense of engagement. There are those who argue that by definition education has always been blended. They may be right but never before at this scale with this level of impact and this degree of quality.

Appendix A. Student perception of instruction items*

1. Feedback concerning your performance in this course was
2. The instructor's interest in your learning was
3. Use of class time was
4. The instructor's overall organization of the course was
5. Continuity from one class meeting to the next was
6. The pace of the course was
7. The instructor's assessment of your progress in the course was
8. The texts and supplemental learning materials used in the course were
9. Description of course objectives and assignments
10. Communication of ideas and information
11. Expression of expectations for performance
12. Availability to assist students in or outside of class
13. Respect and concern for students
14. Stimulation of interest in the course
15. Facilitation of learning
16. Overall assessment of instructor

*Rated on a 5-point Likert scale: excellent, very good, good, fair, poor.

References

- Allen, E., & Seaman, J. (2011). Going the distance: Online education in the United States, 2011. *The Sloan Consortium*. Needham, MA: Sloan-C.
- Ambient Insight (2011). *2011 learning and performance technology research taxonomy*. Monroe, WA: Ambient Insight.
- Blended Learning Toolkit (2012). Retrieved March 20, 2012 from <http://blendedonline.ucf.edu/>
- Bonk, C. J., Olson, T. M., Wisner, R. A., & Orvis, K. L. (2002). Learning from focus groups: An examination of blended learning. *Journal of Distance Education*, 17(3), 97–118.
- Breiman, L., Friedman, J. H., Olshen, R. A., & Stone, C. J. (1984). *Classification and regression trees*. Blemont, CA: Wadsworth.
- Center for Distributed Learning Awards (2012). Retrieved March 20, 2012 from <http://cdl.ucf.edu/home/awards-page/>
- Chang, L., Dziuban, C. D., Hynes, M. C., & Olson, A. H. (1996). Does a standard reflect minimal competency of examinees or judge competency? *Applied Measurement in Education*, 9(2), 161–173.
- CourseSites (2012). Retrieved March 20, 2012 from <https://www.coursesites.com>
- Diamond, J. (1997). *Guns, germs, and steel: The fates of human societies*. New York, NY: New York University Press.
- Dziuban, C., Hartman, J., Cavanagh, T., & Moskal, P. (2011). Blended courses as drivers of institutional transformation. In A. Kitchenham (Ed.), *Blended learning across disciplines: Models for implementation*. Hershey, PA: IGI Global.
- Dziuban, C. D., Hartman, J., & Moskal, P. D. (2004). Blended learning. *EDUCAUSE Center for Applied Research (ECAR) Research Bulletin*(7), 1–12.
- Dziuban, C. D., & Moskal, P. D. (2011). A course is a course is a course: Factor invariance in student evaluation of online, blended and face-to-face learning environments. *Internet and Higher Education*, 14, 236–241.
- Dziuban, C. D., & Moskal, P. D. (2012). Prototypes, connections, and contracts: Examining increasingly complex learning environments. Presented at *EDUCAUSE Learning Initiative 2012 Annual Meeting*, Austin, TX.
- Dziuban, C. D., Moskal, P. D., Bradford, G. R., Brophy-Ellison, J., & Groff, A. T. (2010). Constructs that impact the net generation's satisfaction with online learning. In R. Sharpe, H. Beetham, & De Freitas (Eds.), *Rethinking learning for a digital age: How learners are shaping their own experiences*. New York, NY: Routledge.
- EDUCAUSE (2010). EDUCAUSE announces \$20 million for next generation learning challenges. [Press Release]. Retrieved from <http://nextgenlearning.org/press-releases/101110>
- Executive Conversation (May 11). Introducing know it now blended workshops. Retrieved from <http://www.conversation.com/executiveselling/index.php/introducing-know-it-now-blended-workshops/>
- Graham, C. R. (2006). Blended learning systems: Definitions, current trends, and future directions. In C. Bonk, & C. Graham (Eds.), *The handbook of blended learning: Global perspectives, local designs* (pp. 3–21). San Francisco, CA: Pfeiffer.
- Johnson, S. (2010). *Where good ideas come from: The natural history of innovation*. New York, NY: Riverhead Books.
- Johnson, L., Smith, R., Willis, H., Levine, A., & Haywood, K. (2011). *The 2011 horizon report*. Austin, TX: The New Media Consortium.
- Kaur, A., & Ahmed, A. (2005). Open distance pedagogy: Developing a learning mix for the Open University Malaysia. In C. Bonk, & C. Graham (Eds.), *The handbook of blended learning* (pp. 311–324). San Francisco, CA: Pfeiffer.
- Keegan, D., Lössenko, J., Mázár, I., Fernández Michels, P., Paulsen, M. F., Rekkedal, T., et al. (2007). *E-learning initiative that did not reach targeted goals*. Bekkestua, Norway: NKI Publishing House.
- Keller, J. B., Ehman, L. H., & Bonk, C. (2004). Professional development that increases technology integration by K-12 teachers: Influence of the TICKIT program. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.
- Khan, B. H. (2001). *Web-based training*. Englewood Cliffs, NJ: Educational Technology Publications.
- Mayadas, F. A., & Picciano, A. G. (2007). Blended learning and localness: The means and the end. *Journal of Asynchronous Learning Networks*, 11(1), 3–7.
- Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2009). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies*. Washington, D.C.: U.S. Department of Education, Office of Planning, Evaluation, and Policy Development.
- Next Generation Learning Challenges (2012). Retrieved March 20, 2012 from <http://www.nextgenlearning.org>
- Norberg, A., Dziuban, C. D., & Moskal, P. D. (2011). A time-based blended learning model. *On the Horizon*, 19(3), 207–216.
- Seife, C. (2000). *Zero: The biography of a dangerous idea*. New York, NY: Penguin Books.
- Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. New York, NY: Doubleday.
- Stacey, E., & Gerbic, P. (2008). Success factors for blended learning. In Hello! Where are you in the landscape of educational technology? *Proceedings ascilite Melbourne* (<http://www.ascilite.org.au/conferences/melbourne08/procs/stacey.pdf>.)
- Taleb, N. N. (2007). *The black swan: The impact of the highly improbable*. New York, NY: Random House.
- Wang, M. C., Dziuban, C. D., Cook, I. J., & Moskal, P. D. (2009). Dr. Fox rocks: Using data-mining techniques to examine student ratings of instruction. In M. C. Shellyll, L. D. Yore, & B. Hand (Eds.), *Quality research in literacy and science education: International perspectives and gold standards* (pp. 383–398). Dordrecht, Netherlands: Springer.