**Key Takeaways**

- Ten projects funded by Next Generation Learning Challenges sought to scale the adoption of blended learning models, in the hopes of realizing the potential of those models to improve student outcomes and reduce costs. NGLC’s funding of their solutions has been an opportunity to discover the strengths of different blended learning models, the elements of those models that may be widely adopted, and strategies for addressing implementation challenges. Based on grantees’ work in progress, NGLC staff offer suggestions for future development and adoption of blended learning, included as primer questions and a resource list.

- The grantees designed programs that expanded on other successful models. They varied widely in terms of the amount of time students spent online and face-to-face, the level of integration of face-to-face and online learning experiences, and the disciplines for which they were designed.

- Grantees spent much of their project effort interacting with expansion campuses that were adopting their approaches, although several grantees needed to first complete the technical development of their approach in order to scale it. They provided adopting institutions with training for faculty and IT administrators and offered technical support to faculty, students, and staff.

- Overall, instructors were satisfied with the blended learning programs they implemented and felt their students learned well using them. Instructors most commonly reported challenges related to technology issues and, surprisingly, student resistance. Actual student learning outcomes are not yet available but will be once the grant projects are completed.
Unacceptably low postsecondary degree completion rates combined with excessive debt levels—particularly for low-income students, first-generation college students, and students of color—underscore the need for alternative approaches that improve college readiness and completion. A growing body of evidence suggests that blended learning offers potential for increasing student learning outcomes and reducing costs while expanding an institution's capacity to serve increasing numbers of students. This paper presents the experiences, insights, and strategies for scaling 10 blended learning programs, the winners of a grant competition from Next Generation Learning Challenges (NGLC).

NGLC is a collaborative initiative led by EDUCAUSE in partnership with the League for Innovation in the Community College, the International Association for K-12 Online Learning (iNACOL), and the Council of Chief State School Officers (CCSSO). Funding is provided by the Bill & Melinda Gates Foundation and the William and Flora Hewlett Foundation. In a challenge to higher education to improve postsecondary course completion, persistence, and college completion, in October 2010 NGLC issued a competition for its first wave of funding, Wave I: Building Blocks for College Completion. NGLC and its partners provided 15 months of funding (totaling about $10 million) for 29 projects through the competition. The challenge sought sustainable, broad-scale, technology-enabled solutions that already showed promising results in four challenge areas:

› Scaling the adoption of blended learning models
› Scaling the collection and real-time use of learner analytics
› Scaling deeper learning and engagement through richly interactive technologies
› Scaling the development and adoption of high-quality, modular, openly licensed core courseware

The Potential

Blended learning combines two modes of learning: face-to-face and online. The two modes may occur within a particular class session, within a course, or across an entire degree program. The amount of time spent online versus face-to-face and the types of activities taking place in the different environments may vary, but the learning is integrated and complementary. According to Joel Hartman, Charles Dziuban, and Patsy Moskal of the University of Central Florida, "Ideally, blended learning is a pedagogically driven combination of learning resources and approaches, not a rigid percentage assignment to various instructional settings." Pedagogical decisions about integrating online and face-to-face learning focus on the following learning elements: content, reflection, social/emotional, collaboration and student-generated content, dialectic/questioning, and synthesis/evaluation.

One of the greatest strengths of the blended learning model is its pedagogical flexibility, which enables blended programs to meet individual students’ needs with potentially greater success than programs conducted entirely in a face-to-face mode on campus. In the request for proposals for the Wave I grant competition, NGLC stated, “Given the need to raise the levels of academic achievement, particularly among low-income young adults who often need to combine work with learning, expanding the use of blended learning models may increase learner success…. Blended learning provides students with both the flexibility of online learning (time and place) and the structure and engagement of the in-person classroom experience.” Blended learning also has the potential to deliver better learning outcomes for more students, more cost-effectively, and at a large scale. Evidence from NGLC-funded projects will help determine if this potential is within reach.
However, the lack of models and research on effectiveness and best practices is a major challenge to those interested in developing blended learning strategies. Additional challenges to implementing blended learning include:

- Teaching and learning effectiveness/faculty development
- Finding the time to research, develop, and implement blended courses
- Faculty and student support issues
- Faculty reluctance
- Assessment of the model’s effectiveness
- Assessment of student performance
- Institutional technological infrastructure
- Funding
- Student resistance

### Current Approaches

A total of 160 organizations responded to the initial request for blended learning proposals in the Wave I: *Building Blocks for College Completion* challenge. In June 2011, EDUCAUSE commissioned an analysis of this response from the field, which was conducted by Joel Hartman, Charles Dziuban, and Patsy Moskal of the University of Central Florida. Their analysis may serve as an indicator of current approaches to blended learning in higher education.

The applicants included all types of postsecondary institutions, along with state postsecondary systems and other educational outlets such as health centers. Most of the applicants saw the blended learning model as a strategy to personalize learning to individual needs among a diverse student population. The target student population was primarily under age 26 (as called for in the request for proposals), and many also identified low-income and at-risk students in their target population. The most commonly proposed model supplemented traditional face-to-face classroom instruction with online digital resources so that students could learn on their own time, at their own pace, using these resources. Applicants emphasized the interactive and engaging learning platforms used for the online portion of their blended model. Online resources ranged from specific educational resources to social networking sites.

Proposed models involved courses across the higher education curriculum; the analysts noted that “those submitting [a model] saw wide application possibilities for blended learning.” The most common courses, however, were in the STEM (science, technology, engineering, and mathematics) disciplines, followed by English literature, writing, and business. The request for proposals indicated a preference for developmental, introductory, and gatekeeper courses, and most applicants focused on those kinds of courses. They were identified as courses that historically impact persistence and completion negatively—courses in which students tend to stumble in their educational progress and are more likely to fail or withdraw. The goals of the proposed solutions focused on student success outcomes: improving student success and retention, expanding opportunities for students, building additional learning resources for students, improving cost-effectiveness, and developing and demonstrating new learning models.

The analysts, however, found a “pervasive lack of unification” around the meaning of blended learning in the proposals, suggesting a wide range of understanding about the approach. Further, they found that blended learning has the potential to deliver better learning outcomes for more students, more cost-effectively, and at a larger scale. Evidence from NGLC-funded projects will help determine if this potential is within reach.
learning was “vaguely understood and applied,” with few specifics provided and projects focused more on blended teaching than blended learning (i.e., greater focused on curriculum and instruction than on student activity and outcomes). Few employed “mainstream models or accepted definitions of blended learning.”

The expert review drew these conclusions:

Our analysis convinces us that blended learning is a fully-fledged boundary object: a concept that holds a large community of practice together but lacks a common and precise definition. There was no prototype for blended learning. This appears to be both a weakness and a strength. The weakness comes from the fact that there is no common definition or model and therefore no unifying constructs in the proposals. On the other hand, this loose structure might facilitate out-of-the-box creative solutions.

NGLC and its partners provided funding, collected evidence, and fostered an active community of innovators and adopters to move proven and emerging technology-enabled solutions from “islands of innovation” to greater scale. Hopefully, this effort will contribute to a more precisely defined practice of blended learning at the postsecondary level.

**NGLC-Funded Blended Learning Models**

From the 160 proposals within the blended learning challenge area of the Building Blocks for College Completion competition, nine finalists were awarded grants. This report also includes information from a finalist that applied under another challenge area—Bryn Mawr College—because blended learning is central to their effort. Descriptions of the 10 blended learning models are available in the sidebar.

The blended learning projects were developed across the field of higher education. Of the ten projects, six are led by four-year institutions, two are led by community colleges or community college systems, one is led by an online-learning support organization for a state system, and one is led by a for-profit corporation spun off from a research university.

The four-year institutions include an urban public university, a selective liberal arts college, regional public universities, and a state university system.

The preponderance of public institutions in this group is not surprising; these institutions face higher expectations to educate an increasing percentage of nontraditional students in a climate of declining public financial support. Moreover, blended learning programs are attractive to students juggling work, family, and study because of the flexibility they offer, and these groups of students more commonly attend public institutions. Also, in many instances blended learning courses can be less expensive to offer than face-to-face classes, as the National Center for Academic Transformation (NCAT) program in course redesign (PCR)
clearly demonstrated, according to a June 2005 Policy Alert from the National Center for Public Policy and Higher Education. Of 30 institutions in the five year PCR program, “all reduced costs by 37% on average (ranging from 20% to 77%) and produced a collective annual savings of about $3 million.”

Like the larger set of 160 proposals, most of the NGLC-funded projects are implementing their approaches in mathematics and science courses (though other disciplines are also represented), and most focus on developmental education, introductory-level courses, or a combination of the two.

The blended learning projects themselves range in their readiness for scaling, the key objective for the Wave I challenge. Five might be considered “proof of concept,” in the first rounds of testing and improving the product. Three are more fully developed at “early-stage adoption,” meaning they are learning how their product works in different campus environments and that the support they provide to expansion campuses is resource intensive. Two are “ready for large scale,” in that their approach is portable and the support they provide to campuses that are adopting it is sustainable, requiring minimal staff and financial resources.

Although the 10 grantees may not have blended learning models that are fully specified, NGLC’s funding of their solutions has been an opportunity to discover the strengths of different blended learning models, the elements of those models that may be widely adopted, and strategies for addressing implementation challenges.

### Lessons Learned about NGLC

#### Design

**Key Principles: Building on the Empirical and Theoretical Work of Others**

The pedagogical visions underpinning the NGLC-funded blended learning projects vary widely, depending on the project’s genesis and leadership. In several instances, project leaders are working to integrate successful models into new environments. These models—and the interpretation of learning science each embodies—are, in many cases, widely recognized for their demonstrated effectiveness in improving student outcomes, lowering costs, or both. For instance, NCAT espouses and seeks to disseminate and scale its vision for using technology to restructure large-enrollment courses with the goals of improving learning outcomes and reducing delivery costs.

NCAT’s philosophy relies on a fundamental shift in assumptions about the current instructional model: from a primary focus on more effective and efficient teaching by faculty toward a primary focus on more effective and effective learning by students, where faculty are one of many important resources for learning. NCAT’s work and models have had a strong influence on the thinking behind at least four of the blended learning projects. The version of the NCAT approach applied to mathematics instruction known as the *emporium model* underlies the vision of the Chattanooga State Community College project *Do the Math* and of *Math on-Demand+ Early Alert (MOD+)* at the City Colleges of Chicago; it also has contributed to some of the ideas being realized at the California State University, Northridge, in Hybrid Lab Courses for Core Mathematics Courses. In addition, NCAT’s designs form the basis for the course redesigns under way through the *Missouri Learning Commons*, with training and support provided by NCAT to the 10 out of 13 institutions that NCAT approved.

Another pair of projects drew inspiration from the materials and environments of the *Open Learning Initiative* (OLI) at Carnegie Mellon University. Supported by the William and Flora Hewlett Foundation over the past decade, OLI today offers completely interactive, self-paced online courses at the undergraduate level in 15 subjects, from statistics to biology, for anyone who wants to learn or teach. The aim is to create high-quality courses and contribute original research to improve learning and transform higher education. Research has confirmed the effectiveness of the OLI materials. Recently, a 2012 study compared learning results for students who took an...
OLI statistics course online with results for students who learned in traditional classrooms. The OLI students attained comparable results in less time, and the study also suggested that cost savings and productivity gains would be attained over time. The University of Wisconsin–Milwaukee and Bryn Mawr College were influenced by the OLI concept and its realization, each in a distinct way. UW-Milwaukee’s project leader drew her inspiration originally from OLI. Although specific OLI courses were not available for the subjects ultimately included in the UW-Milwaukee project, the developer of Classroom Salon at Carnegie Mellon—UW-Milwaukee’s partner—continues to work with OLI to integrate the two platforms. Bryn Mawr enabled faculty at its own campus to utilize OLI course materials in a variety of disciplines where there was a fit between the OLI materials and the subjects that the Bryn Mawr faculty were teaching, and the institution is encouraging OLI implementation at other liberal arts colleges in their network.

In another example of innovation built on a successful existing model, Indiana University-Purdue University Indianapolis (IUPUI) incorporated technology into peer-led team learning (PLTL), a pedagogical approach that had already gained wide acceptance in traditionally taught courses in the sciences. Their project, cyber Peer-Led Team Learning (cPLTL), introduced videoconferencing as an online component that extends PLTL beyond the confines of the physical campus.

Many of these models build on the empirical and theoretical work of others, as described above, and three of nine blended learning projects shared prior evidence that their model in particular had produced positive learning outcomes for students. At the time of funding, several projects were still refining their models and technologies, had not yet piloted them, and therefore could not provide prior evidence. At the same time, though, other projects already had tested models and were ready at the start to scale the adoption of their models and collect additional evidence of effectiveness in new settings. All of the projects engaged in data collection during the NGLC grant period, and an independent evaluation of the Building Blocks projects by SRI International, which was commissioned as an external evaluator by the Bill & Melinda Gates Foundation, will begin to generate evidence of effectiveness of these new blended learning models. This effort will add to the empirical base and help identify the key design principles that are essential to improving learning and success.

**Design Characteristics: Amount of Time Spent Online and Extent of Technology Integration**

Blended learning incorporates a broad spectrum of possible models. One way to categorize models is to consider the ratio of the time spent online to that spent in face-to-face settings, since this varies widely. Another way of categorizing models is to consider the relative extent to which the learning that occurs online and the learning that occurs in person are integrated. These two scales represent the axes in a graphic presented in figure 1. The blended learning models each represent a unique combination of the two scales, as described in table 1. Grantees’ work tends to cluster in the upper left quadrant of Figure 1: that is, with more face-to-face than online work and with more than a minimum of integration between learning in classroom settings and online. Projects in mathematics inspired by the NCAT model utilized more time online than in person and therefore fall into the upper right quadrant. For grantees whose work sought principally to provide support and training for other campuses, the courses developed in their projects naturally fall in more than one quadrant.
Figure 1. Variations of blended learning
### Table 1. Level of Technology Infusion and Online Instruction

<table>
<thead>
<tr>
<th><strong>Blended Liberal Arts STEM Courses</strong>&lt;br&gt;Bryn Mawr College</th>
<th>After workshops on available resources and common pedagogical techniques, individual faculty members determined how best to incorporate courseware from Carnegie Mellon's OLI or equivalent materials into the face-to-face instruction characteristic of liberal arts colleges in their particular subjects and courses.</th>
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<tr>
<td><strong>Catch-up and Complete</strong>&lt;br&gt;The SUNY Learning Network</td>
<td>The SUNY Learning Network is converting two online developmental mathematics courses and two complete AAS degrees in business administration (a total of 33 courses) at two SUNY community colleges into blended learning courses and programs. It is testing a number of interventions, including an early-alert system, an adaptive online tutorial system (for the developmental math course), open educational resources, and a social network and online help system specifically designed to support the success of blended and online students.</td>
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<td><strong>Classroom Salon</strong>&lt;br&gt;University of Wisconsin-Milwaukee and Carnegie Mellon University</td>
<td>This model blends 70% face-to-face instruction with 30% online learning using the Classroom Salon social networking environment developed by Carnegie Mellon University. It is designed to enable students in a class to interact with one another as they read and comment on online texts.</td>
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<tr>
<td><strong>Cyber Peer-Led Team Learning (cPLTL)</strong>&lt;br&gt;Indiana University Purdue University Indianapolis</td>
<td>IUPUI's chemistry department had already adopted peer-led team learning, an instructional approach that preserves face-to-face lectures and either replaces the recitation or adds weekly two-hour sessions in which six to eight students work as a team under the guidance of a peer leader to solve carefully constructed problems. Transforming this instructional approach to a blended model meant that the student groups worked with their peer leader via videoconference, replacing the in-person workshop sessions and eliminating the need for students to come to campus for this portion of the course.</td>
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<tr>
<td><strong>Do the Math!</strong>&lt;br&gt;Chattanooga State Community College</td>
<td>In the math emporium model there is no lecture component of the course. Instead, the developmental math students work individually and receive assistance from faculty in math class and in the math lab.</td>
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Table 1. (continued)

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<th>Expanding Blended Learning Through Tools and Campus Programs</th>
<th>University of Central Florida and the American Association of State Colleges and Universities</th>
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<td>This project involves faculty in different disciplines at 20 institutions, each of whom received instruction and support to redesign his or her own course in a blended model.</td>
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<th>Hybrid Lab Courses</th>
<th>California State University, Northridge</th>
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<td>Introductory math courses at CSU Northridge involve three key components: (1) engagement-style lectures, offered in a face-to-face setting with common lecture notes across multisection courses, (2) common online homework assignments with instant grading and feedback capabilities, and (3) a one-unit hybrid lab that incorporates a contact hour for group work and individualized online remediation for each student.</td>
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<th>Math On-Demand+ Early Alert</th>
<th>The City Colleges of Chicago</th>
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<td>Like the initiative at Chattanooga State Community College, this project is an implementation of the NCAT math emporium model. City Colleges of Chicago’s work in this project emphasizes supporting faculty to work in this new way to support students outside class—on their own or in the math lab—with tutors to greatly decrease their time spent in developmental courses and increase their opportunities for transfer and graduation.</td>
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<th>Missouri Learning Commons</th>
<th>University of Missouri System</th>
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<td>Faculty working groups at 13 institutions transformed 13 large-enrollment courses in a range of disciplines for blended delivery, according to one of the NCAT models. Across the various courses, the goal was to move 40–60% of instruction online.</td>
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<th>OpenStudy</th>
<th>Inquus Corporation</th>
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<td>This social network enables students to engage with others elsewhere studying the same topic at the same time, asking questions and getting immediate feedback from peers who are also online. Use of this environment can be integrated with any other blended or traditional approach.</td>
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Disciplines: Blended Learning Applied in a Variety of Disciplines, Especially Mathematics

The NGLC-funded projects demonstrate that blended learning is designed for many different academic disciplines. Although nearly half of the blended learning projects involved developmental or introductory-level mathematics (Chattanooga State Community College, City Colleges of Chicago, SUNY Learning Network, and California State University, Northridge), projects included a broad range of other disciplines. OpenStudy, the Missouri Learning Commons, and the University of Central Florida’s Blended Learning Toolkit (a web-based resource built to scale and support blended learning nationwide) all sought to transform teaching and learning in disciplines across the curriculum, paying particular attention to large-enrollment and high-need courses. Faculty members from multiple fields were involved in new course designs in Missouri and at the University of Central Florida’s expansion campuses (comprehensive four-year public institutions belonging to AASCU, the American Association of State Colleges and Universities). Cyber Peer-Led Team Learning at IUPUI focused on chemistry but also included biology courses at two of the partner campuses, Purdue University and Florida International University. In addition to the developmental mathematics courses developed in SUNY Learning Network’s project, the project team also worked to develop a complete associate’s degree program of 35 courses offered at two community colleges.

Implementation and Scaling

A central purpose of the Building Blocks challenge was to enable scaling of approaches already successful in at least one place to additional institutions. Much of the activity that grantees engaged in during the grant period, therefore, involved interactions with expansion sites—adapting technology to ready it for use in other places, recruiting partner institutions or participating individuals at partner institutions, training technology staff, training faculty or support staff, supporting staff and/or faculty at partner campuses, and troubleshooting technology problems—as well as developing the internal structure to provide these interactions. Accordingly, innovators’ designs needed to be portable to other institutions, both culturally and technologically.

Organizational Capacity: Strong Institutional Capacity but Direct Staff Experience Varied

To implement effectively, the grantees needed to develop the capacity to interact with expansion sites. In its independent evaluation, SRI International reported that the nine blended learning grantee organizations included in their report had strong institutional capacity, but only about half of them had key staff with prior experience implementing a project of this type.12 At the start of their grant award in April 2011, the grantees reported on their readiness: The majority reported that they were most ready to create an effective partnership with partner organizations but least ready in terms of developing and implementing the technology. The developers of blended learning models felt especially confident about their project partners but were more concerned about scaling their projects to new campuses than they were about the state of their software. Still, by the end of summer 2011, only three of the nine reported that their technology was fully developed.
Technology Platforms: Selection Based on a Number of Considerations

A number of considerations around technology infrastructure arose for project leaders as they designed the projects and sought potential partners:

- Appropriateness for the discipline
- Potential for integration with the other networked technologies used at an institution
- Cost initially and on an ongoing basis
- Ability of local technology organizations on partner campuses to provide support for a selected platform
- Amount of training that students, faculty, and staff would require to become comfortable with a new platform or platforms

In some cases, the platforms are necessarily specific to the discipline of study. For instance, both *Do the Math!* at Chattanooga State Community College and *Math On-Demand+ Early Alert* at the City Colleges of Chicago use MyMathLab as the platform for their NCAT emporium models. CSU Northridge combines the use of several tools in their project Hybrid Lab Courses for Core Math Courses: the open-source Moodle learning management system for course materials; ALEKS, a fee-based commercial product that directs student learning individually, for remediation; and WebWork, an open-source online homework system—managed by the Mathematical Association of America and the NSF—for math and sciences courses.

Some of the projects that sought to improve outcomes in multiple disciplines used a single platform at both the originating institution and at partner institutions. One example is the opportunity to view and/or implement materials within the Moodle LMS, already used at many of the potential partner campuses in Bryn Mawr College's project, as faculty created blended courses in the STEM disciplines. Similarly, the Adobe Connect platform selected for cPLTL had previously been licensed for other campus-wide videoconferencing needs both at IUPUI and at its two partner campuses. For the benefit of the 20 partner institutions of the UCF/AASCU project Expanding Blended Learning through Tools and Campus Programs, UCF created two prototype courses, in composition and in algebra, and made them available in two formats, either as an IMS package ready for importing into any compatible LMS or in a more generic MS Word format, thus allowing for easy copying/pasting for revision/customization and placement into any LMS.

Other projects faced more complexity in their selection of platforms. The Missouri Learning Commons course redesigns were carried out at 13 different campuses. Given the diversity of campus technology environments and of disciplines, the redesign teams selected platforms appropriate for the local circumstances and the curricula. The SUNY SLN “Catch-up and Complete” Enhanced Blended Learning Initiative selected separate tools to achieve each of its outcomes. For the developmental math course taught at the campuses of the two community college partners, for instance, they used Carnegie Learning’s Cognitive Tutor. For their early-alert implementation they selected the commercial system Starfish. To provide online learning resources affordably for students, faculty reviewed Washington State’s Open Course Library materials and other open educational resources and were asked to try to keep the cost of textbooks to $50 per course.

Finally, some of the blended learning projects were designed, either wholly or in part, to pursue some custom platform development. OpenStudy sought to create a platform to engage students in peer-to-peer learning and
support study groups based on the OpenStudy open social learning network; the innovation incorporated such features as a study widget and making analytics readily available to adopting campuses that partner with OpenStudy. The University of Wisconsin–Milwaukee and Carnegie Mellon University’s Classroom Salon project included among its deliverables the development of a new platform integrating Classroom Salon with the OLI at Carnegie Mellon University. The resultant site for Classroom Salon is browser-based and thus could be integrated into any LMS. SUNY SLN was especially ambitious, adding a development project to the other elements of their program outlined above. The project leader and her colleagues developed a prototype of the SUNY Learning Network Commons to serve as a central online student learning hub.

Faculty Development: Support and Training Rated Highly; Participants in Turn Gave Innovations High Ratings

Looking across these projects also strongly suggests that faculty development is a critical component of integrating blended learning at an institution because redesigning courses and providing appropriate support to students in a blended environment often require reconceptualizing pedagogy and tactics as well as using technologies that may or may not be familiar to faculty. SRI International found that 73% of the instructors involved in blended learning projects participated in training and over 90% of those instructors were moderately or highly satisfied with that training. Instructors who attended training were more likely to be positive towards the project; 44% of blended learning instructors sought additional support, primarily from an on-campus project leader or staff. Although they needed additional support, most were highly satisfied with it.

Training was provided in various ways. In the process of realizing the concept of the Missouri Learning Commons, for instance, training and support for the course redesign teams of faculty were provided, under contract, by NCAT. The 20 AASCU institutions partnering with the University of Central Florida, in the effort to export UCF’s blended learning model, each agreed to offer one or more blended courses; faculty who taught those courses first completed at least one (in many cases two) of the three online professional development courses contained within UCF’s Blended Learning Toolkit. These professional development courses were focused on English/composition faculty, math/algebra faculty, and faculty teaching any discipline in a blended format. In some cases, faculty in the discipline-specific courses also participated in the more generic offering. The SUNY Learning Network offered faculty workshops at both of the community colleges they are supporting in their project. Workshop topics included blended learning, deeper learning, open educational resources, and supporting student success by helping them develop self-regulation skills. Thirty-two community college faculty members participated, and all either offered blended courses in spring 2012 or will do so in fall 2012.

The University of Central Florida, noted as an institutional leader in blended learning, was one of the most ambitious in terms of the number of initial scaling partners. UCF prepared online materials in the form of the Blended Learning Toolkit, which included a five-week massive open online course (MOOC) designed as generic faculty development for designing and delivering a blended course in any discipline. Faculty who took part in the online course offered in summer 2011 had assigned readings and synchronously offered
online lectures from experts at UCF, the University of Illinois at Chicago, and the University of Wisconsin-Milwaukee. The lessons of this course were important foundations for the faculty at the 20 AASCU campuses who were teaching blended courses for the first time in the following academic year. More than 200 individuals registered for the MOOC, yet only about half were from AASCU campuses, suggesting considerable interest in learning opportunities of this type beyond the partnership. Both of these were high-profile but low-touch efforts in that they did not involve the routine provision of ongoing support to most of the faculty involved after the workshop period. Ongoing support would have been impractical over time, given the large number of faculty involved among the many institutions in these projects. However, the UCF team did provide ongoing support for AASCU participants in the form of monthly webinars and e-mail correspondence to foster a community of practice within specific disciplines (English and math).

Bryn Mawr College sought to scale a blended learning model to support deeper learning in STEM courses to 40 other liberal arts institutions. They invited representatives from both administration and faculty of these peer colleges to three in-person workshops: one in the summer before the model was implemented at Bryn Mawr, one midway through the year, and one at the conclusion of the academic year to share research results and familiarize their partners with the environment they had used. Faculty from 23 of the partner campuses applied to develop blended courses in the project, most during summer 2012 for delivery in 2012-13. The selected faculty members who requested it then received support in their course development from an instructional technologist at Bryn Mawr.

Other lead institutions working with smaller numbers of faculty and staff across two or three partner institutions utilized less formal approaches, with less emphasis on structured training. For instance, the Chattanooga State Community College, IUPUI, and CSU Northridge project teams interacted frequently but informally with their respective partner campuses. CSU Northridge also developed a Moodle training site featuring a web-based training video for the faculty at the partner campuses (see http://pachyderm.cdl.edu/elixr-stories/tcd-business-math-training-version/). The principal investigator at the University of Wisconsin-Milwaukee offered professional development and support to a coterie of instructors at her own campus, with a particular focus on refining data reporting and tracking tools.

**Challenges And Campus Perceptions: Instructors Mostly Favorable to Innovations but Technology Challenges and Student Resistance Were Top Barriers**

Campus leaders and a sample of participating faculty at lead institutions and their expansion site partner institutions shared their perceptions of project implementation through the independent evaluation conducted by SRI International. For all 29 projects (blended learning and others), only 17% of expansion campus leaders said they made major changes to the original model in order to implement it; 40% made minor modifications. This suggests that, overall, the portfolio of Building Blocks models had fairly adaptable designs. Expansion campuses were more likely than lead institutions to report barriers, though; the barriers included faculty resistance, insufficient funding, and lack of training.

Looking at findings for just the nine grantees funded within the blended learning challenge area (i.e., not including Bryn Mawr College), instructors most frequently reported technology challenges (e.g., access, reliability, ease of use); 55% of blended learning instructors reported such issues. The second most frequently reported barrier was student resistance. According to SRI, instructors described student resistance as a reluctance to take responsibility for initiating and managing their own online learning. This is an important finding because students are often thought to want more technology and that they know what to do with it when
asked to use it. Relatively few instructors reported challenges around lack of alignment with their teaching approach, course goals, or course schedule. The blended learning projects required most instructors to make changes in the way they were teaching. Nearly half (42%) made some changes, and an additional 38% reported making major changes. Furthermore, most instructors who had access to performance data through the innovation’s software (78%) said that they used the data; two-thirds of those who used the data reported that it influenced what or how they taught. These instructors rarely reported instructional challenges as barriers to implementation, however, suggesting a smooth instructional transition to the new approach.

Overall, instructors were favorable towards the new approaches they were using. About 74% of instructors believed students in their courses were moderately or highly satisfied with the blended learning approach. About two-thirds (68%) believed their students learned well or very well in the course using the NGLC-funded blended learning model. Those instructors who reported technology challenges, lack of alignment with their teaching approach or course goals, or a poor fit between the model and their allotted class time, however, were less positive towards it.

Looking at the full portfolio of Building Blocks projects, half of the campus leaders reported that they would definitely continue implementing the approach. Another 41% said they might continue, once they could evaluate evidence of how well it worked. Only 2% reported that they would not continue the approach, suggesting overwhelmingly positive impressions of those scaling the 29 NGLC-funded projects.

**Sustainability: Drawn from Cost-Savings, Train-the-Trainer Approaches, and Policy Support**

One rationale for a blended learning business model’s sustainability rests on the likelihood that incorporating online elements into a face-to-face course will increase students’ successful completion of the course and, ultimately, save a campus money. For CSU Northridge, the blended model has proved cost-efficient: increased student success in blended gateway mathematics courses reduces the number of students repeating classes because more students pass the class on the first attempt. This makes it possible for the institution to offer fewer course sections, reducing costs. These savings are in part redirected to support the additional, but modest, instructional costs the model requires. The net savings are used to incentivize further scaling up—lowering the number of courses that institutions need to offer for remediation and entry-level courses frees institutional funds for transforming additional courses to a blended model, reducing or eliminating the need for external sources of funding to enable such transformations.

UCF sought to ensure the sustainability of blended learning at 20 fellow AASCU member campuses through a “teach them to fish” model, in which project partners provided models, samples, resources, and train-the-trainer materials designed to enable the campuses to function independently at the conclusion of the grant. Planners of the statewide effort of the Missouri Learning Commons envisioned sustainability as a likely result of the project’s influence on higher education practice and policy in Missouri. Over a dozen large-enrollment courses are being redeveloped for blended delivery across all of the state’s public institutions, with a potentially profound effect on the delivery of undergraduate instruction statewide.
Yet to Learn

Through NGLC, grantees are discovering what it takes to develop a strong blended learning model and to implement it at multiple campuses. Because most projects are still under way, there is still a great deal to learn. This report provides only indications of what we are learning, as we are learning, but does not offer conclusions. Of primary importance is that this report does not include evidence that these blended learning models lead to changes in student outcomes attained. It does not demonstrate efficacy of the models over time, nor does it include results about the students, the context, and the level of scale for which efficacy and successful outcomes may be obtained. Furthermore, the report does not offer much information about the kinds of deeper learning the designs are trying to produce, the metrics for success they are using to evaluate their model’s effectiveness, and ways that formative assessment and learning analytics are incorporated into their designs. Information like this is not yet available. Indeed, this report sheds more light on the administrative and financial components of designing and implementing blended learning than it does on the pedagogical and learning dimensions of blended learning. But future reports that address these issues will help create a more complete picture of the blended learning models in NGLC’s Wave I: Building Blocks for College Completion.

Furthermore, blended learning is evolving rapidly, and the field’s understanding of the potential for blended learning to transform education has become much clearer since the request for proposals was issued in October 2010. The report, therefore, opens a window into the designs and implementation experiences of 10 innovators who have helped move our understanding forward. In the spirit of a field that is moving quickly, suggestions for future development and adoption of blended learning innovations are assembled from these partial observations (see Primer Questions that follow). Iterations on future designs and implementations can incorporate any new evidence that emerges.
Primer Questions for Future Work

These questions may be helpful in guiding your thinking and planning efforts in the design and adoption of blended learning.

For developing new blended learning models
1. What are your goals for designing a new blended learning model? How well do they align with the goals of your department, organization, and/or institution?
2. Will your institution need additional organizational capacity in order to implement the model? If so, whom will you approach about the current state and possible future development of that capacity (key administrators, the IT organization, the teaching and learning center)?
3. What pedagogical considerations will determine how much of your blended learning design is face-to-face and how much is online? Which learning activities will occur online, and which will occur in the classroom? How will the online and classroom-based learning activities be related to each other to support and enhance each other?
4. What principles of learning science will guide your design work? Thinking specifically about the experiences of the NGLC-funded projects with the five NCAT prototypes and the OLI learning environments, would either of these resources be helpful in framing your design?
5. What metrics will indicate the effectiveness of your blended learning design? Consider fidelity of implementation to the model, students served, student progress, improvements to learning, and cost.
6. How readily could your model be used in a different institutional setting, given the technology infrastructure required for its use? Consider learning platforms, network capacity, and student access to appropriate devices.
7. How might you provide training and support for faculty and student use of the tool at any institution? What kinds of materials do you need to prepare for IT staff at institutions adopting the new tool?
8. How will you support faculty and students as they begin using the model? What support is available from the developer?

For adopting blended learning models
1. How does the model’s philosophy of learning fit with that of your institution, department, or course?
2. What is the culture of your institution or department in relation to course design and curriculum development? Do individual faculty members have primary control, or do teams of faculty co-develop courses? How would a change in this process be received?
3. How does this approach meet the needs of your student population? Would the tool or the model need to be adapted to best meet the needs of students at your institution?
4. What are the technical requirements for implementing this blended learning model at your institution? What capabilities within IT need to be improved to avoid the most common technical challenges? What technology capabilities do individual students, faculty, and administrators need in order to participate in blended learning?
5. How will you support faculty and students as they begin using the model? What support is available from the developer?
6. How will you measure deeper learning and/or improvements to learning made possible by blended approaches?
7. How will you know if the blended learning model is cost-effective, for both the institution and students?
Resources

This set of resources includes tools and additional readings to support the design and adoption of blended learning.

The **Blended Learning Toolkit**, developed by the University of Central Florida, is a repository of best practices, course design principles, prototype course templates, train-the-trainer materials, assessment and data collection protocols, and research literature. The toolkit was developed as part of UCF and AASCU's grant award from NGLC and is based on UCF's proven model of blended learning.

The **Breakthrough Models Academy**—a collaboration of EDUCAUSE, the League for Innovation in the Community College, and Next Generation Learning Challenges—is a unique opportunity for higher education professionals who seek to catalyze change through the use of information technologies and innovative new approaches to student support and personalization to foster student success. The academy combines a week-long face-to-face event with an ongoing breakthrough model design challenge developed by cross-institutional teams.

*Increasing Success for Underserved Students: Redesigning Introductory Courses.* This report from the National Center for Academic Transformation looks at the impact of its course redesign strategies on the success of adult students, students of color, and low-income students. NCAT redesign techniques have been particularly effective with these underserved student populations.

**Blended Learning: Research Perspectives.** This 2007 book from the Sloan Consortium, edited by Anthony G. Picciano and Chuck Dziuban, examines research and best practices on issues such as designing and delivering hybrid courses, student interaction and student satisfaction, strategies for training and preparing faculty, and other related topics.

**Leveraging Blended Learning for Flexibility, Engagement, and Persistence**, EDUCAUSE on Campus. This comprehensive guide contains workshop modules intended to reduce some of the extensive work involved in assembling the components and curriculum for such a program. Each of the modules contains topical guidelines, content, and resources, and each can be easily customized to fit the needs of your institution, department, or unit.

*7 Things You Should Know About the HyFlex Course Model*, ELI 7 Things You Should Know, November 2010. The HyFlex course design model presents the components of hybrid learning in a flexible structure that gives students the option of attending sessions in the classroom, online, or both. Students can change their mode of attendance weekly or by topic, according to need or preference.

*Underlying Premises: Blended Learning*, October 2010. In this background resource generated for grant seekers, NGLC identifies key resources, case studies, and campus examples. Three resources that directly address the themes presented in this report are as follows:

- The Maricopa Community Colleges, Maricopa Center for Learning and Instruction, **Blended (Hybrid) Learning Faculty Development Initiative** offers support for faculty members in designing new or redesigning existing courses for delivery in the blended course delivery format.
Charles D. Dziuban, Joel L. Hartman, and Patsy D. Moskal, “Blended Learning,” ECAR Research Bulletin 7, 2004. The authors found that blended learning resulted in improved student learning outcomes and lower rates of attrition when compared to both face-to-face and fully online learning. The most successful blended courses are wholly redesigned, rather than simply moving some components of a course online while leaving the remaining activities unchanged. The authors argue that blended learning can reduce direct instructional costs by as much as 50%.

Barbara Means, Yukie Toyama, Robert Murphy, Marianne Bakia, and Karla Jones, Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies, U.S. Department of Education, 2009. This report found that, overall, blended learning programs produce better learning outcomes than courses taught either face-to-face or fully online. A follow-up report from the Community College Research Center, however, questions the validity of this finding for low-income and academically underprepared students because the meta-analysis focused on relatively well-prepared students.

The December 2011 Issue of EDUCAUSE Quarterly included several articles on NGLC grant projects:


- “Creating a Learning Flow: A Hybrid Course Model for High-Failure-Rate Math Classes,” by Katherine Stevenson and Louis Zweier

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NEXT GENERATION LEARNING CHALLENGES

Next Generation Learning Challenges (NGLC) accelerates educational innovation through applied technology to dramatically improve college readiness and completion in the United States. This multi year program provides investment capital to expand the use of proven and emerging learning technologies, collects and shares evidence of what works, and fosters innovation and adoption of solutions that will dramatically improve the quality of learning in the United States, particularly for low-income students and students of color.

Organizational Partners and Funders

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For more information, visit www.nextgenlearning.org.
Notes

4. The request for proposals is available upon request. Contact the authors. For more information about the funding challenge, see http://www.nextgenlearning.org/wave-iii-b.
6. NGLC Wave I Pre-Proposal Analysis, 60.
7. The Sloan Consortium defines blended learning as: 1) courses that integrate online with traditional face-to-face class activities in a planned, pedagogically valuable manner; and 2) where a portion (institutionally defined, between 20% and 80%) of face-to-face time is replaced by online activity. This definition was developed at a 2005 Sloan-C Workshop on blended learning issues (see http://sloanconsortium.org/node/921, 9).
10. SRI’s data analysis of blended learning programs does not include Bryn Mawr College’s project, since it was funded under a different challenge area.
11. This graphic was inspired by a similar graphic found in Diaz and Brown, “Blended Learning,” 10, which plotted amount of time spent online versus face-to-face against the extent and sophistication of the online technologies utilized.
12. On average, blended learning projects were somewhat better positioned than other Wave I projects in this regard.