Title: HyFlex Course Delivery: Facilitating Graduation for On-line and On-ground Learners

Short Title: HyFlex Course Delivery
November 19, 2010
NGLC Grant Pre-Proposal

Project Team:

PI: Maggie Beers, Director, Academic Technology, San Francisco State University
Co-PI: Brian Beatty, Associate Professor, Chair Instructional Technologies Department, San Francisco State University
Co-PI: Kevin Kelly, Online Teaching and Learning Manager, Academic Technology, San Francisco State University
Co-PI: Jim Julius, Associate Director, Instructional Technology Services, San Diego State University
Co-PI: Linda Dobb, Interim Vice-Provost and University Librarian, Cal State East Bay

Additional Participating Campuses:

Cal State East Bay: Linda Dobb, Interim Associate Provost & University Librarian,
Cal State Maritime: Jim Burns, Dean of Extended Learning
Chancellor's Office: Gerry Hanley, Senior Director, Academic Technology Services
San Diego State University: Jim Julius, Associate Director, Instructional Technology Services
Cal State Sonoma: Brett Christie, Director, Faculty Development
Cal State Northridge: David Levin, Senior Director, Academic Techology
CSU Stanislaus: Brian Duggan, Director, Learning Services, Office of Information Technology
San Jose State University: Chris Laxton, Director, Academic Technology

Challenge Areas

Q2. With which of the four NGLC challenge areas will your proposal engage? [Select all that apply]

- **Blended Learning**
- **Learner Analytics**
- **Deeper Learning and Engagement**
- Open Core Courseware

Q3. Which ONE of the four NGLC challenge areas do you consider to be the primary focus of your proposal?

- **Blended Learning**
- Learner Analytics
- Deeper Learning and Engagement
- Open Core Courseware

500 characters maximum

This proposal contributes to all four areas, with a primary focus on Blended Learning, and a secondary focus on Deeper Learning and Engagement. The innovative HyFlex course delivery model provides a disruptive change to the existing blended learning models by enabling students to self-determine which formula of blended learning helps them achieve success on a class-by-class basis. Student choice in when, how, and how often they engage with the content can enable deeper learning and engagement.

Project Overview
Q4. Briefly describe your proposed project and how it relates to the NGLC challenge areas. (completion, persistence, content mastery, mastery of deeper learning outcomes)
5,000 characters maximum

This multi-institutional project and research study seeks to scale, inform and evaluate the effectiveness of San Francisco State University's (SF State) innovative hybrid-flexible (HyFlex) course delivery method as a cost-effective manner to facilitate graduation and improve student performance across a range of public university environments serving small and large urban and rural student populations.

Unlike other blended approaches, HyFlex courses allow students to choose their own mix of participation modes, either in-class or online, on a weekly or topical basis. Sloan-C identified SF State's HyFlex approach as an Effective Practice, and the Educause Learning Initiative selected it as its plenary session for their 2010 Fall Focus Session *Blended Learning: The 21st Century Learning Environment* (Beatty, 2008; 2010).

Shrinking budgets, growing enrollments, and a California State University-wide initiative to increase the rate of student graduation have prompted SF State to develop a comprehensive strategy around the delivery of HyFlex courses supported by SF State's successful implementation and integrations of lecture capture technology and the open-source Moodle Learning Management System (LMS). Other technologies, such as webconferecing, audio podcasts and screen casts are also used to support this HyFlex approach. As part of this strategy, SF State is targeting "bottleneck courses," typically gateway courses, which are preventing students from advancing to graduation, either because these courses are impacted and students can't gain adequate access to seats, or because these courses present difficult concepts that lead to higher student failure rates.

To address course impaction, the HyFlex model enables the university to lift enrollment caps in impacted bottleneck courses because archived lectures can be viewed online, no longer linking course capacity to the physical capacity of the lecture hall. To help improve student performance in bottleneck courses with high failure rates, the archived lectures enable students to review difficult course concepts over and over, review lectures with peers in study groups, access lectures from prior courses for remediation,

and review the first weeks' lectures in cases where the students were enrolled after the start of the semester.

HyFlex is a term coined by Brian Beatty, Chair and Associate Professor in the Instructional Technologies Department in the College of Education at SF State, and more than 4,000 students attend HyFlex courses at SF State every semester. Unlike other blended learning approaches, in which the faculty and departments decide when the student will attend face-to-face or online, HyFlex enables student to make their own self-determined choices, based on their individual needs, learning styles, and schedules.

HyFlex course design and delivery support these four values:
1) *Learner control.* Students control how and when they complete class activities, prompting them to take ownership for their participation and learning. They control the pace and can adapt their school life to their other responsibilities.
2) *Equivalent Learning.* HyFlex options are designed to help students meet the same fundamental set of learning objectives for a course through equivalent learning activities.
3) *Reusability*. HyFlex resources are designed to be useful for in-class and online students. When students complete activities in any modality, these artifacts become potential learning resources for the other students.
4) *Accessibility.* The HyFlex approach accommodates the students' physical, emotional, and cognitive characteristics they bring to the course experience by using accessible technologies and universal design for learning concepts (www.cast.org).

In addition to these student benefits, the HyFlex approach can help with recruitment and retention since programs can attract new populations without giving up their core constituencies, and can retain students who move away from the region. HyFlex courses can also serve as a first step to the creation of fully online programs, without requiring the resources to build a completely separate online degree program.

Project deliverables that will be scaled and shared across partner institutions will include a faculty development institute to help faculty convert targeted bottleneck and gateway courses to HyFlex delivery; a virtual resource hub (OER) for students, faculty, staff and administrators; an expanded technical infrastructure and support structure for LMS and lecture capture technologies; the development of LMS learner analytics to monitor student success and signal appropriate faculty interventions; and an ongoing research and assessment strategy to ensure the pedagogical, technical, and organizational effectiveness of HyFlex course delivery as a way to improve student completion, persistence, content mastery, and mastery of deeper learning outcomes in a cost-effective way for budget-strapped universities.

Scaling Potential

Q5. NGLC seeks proposals for solutions that have already been investigated in at least some meaningful way and shown to generate some relevant benefits. What is the current reach of the primary solution that you propose to scale? Be brief and numeric: numbers of students currently served, numbers of courses, numbers of institutions/campuses, etc.

500 characters maximum

Faculty: 15-20 using HyFlex course delivery; 25 attended 2010 HyFlex Faculty Institute
Courses: 20 courses delivered via HyFlex; 20 courses redesigned in HyFlex Institute
Students: 3500-4000 students enrolled in HyFlex courses each semester
Institutions: 1 institution using HyFlex; 1 institution using HyFlex Institute
Technical Infrastructure: 13 rooms equipped with audiovisual and lecture capture technology to support HyFlex course delivery

Q6. If your proposal is funded, by how much do you intend to increase the reach and dissemination of the solution? Again, be numeric, using the same measures as for your previous answer: (500 characters)

Faculty: 50 using HyFlex course delivery; 100 attending 2011 HyFlex Institute
Courses: 50 courses delivered via HyFlex; 50 courses redesigned in HyFlex Institute
Students: 25,000 students enrolled in HyFlex courses
Institutions: 7 institutions using HyFlex; 7 institutions using HyFlex Institute
Technical Infrastructure: 28 rooms equipped with audiovisual and lecture-capture technology to support HyFlex course delivery

Q7. Briefly, please discuss the immediate (i.e., within the term of the NGLC Wave 1 grant) and longer-term scaling potential of your proposed solution. What is the potential upside? What are the primary obstacles to be overcome or risks to be mitigated? (2,000 characters)

Scaling the HyFlex approach in the near and long term depends on the willingness and preparation of the instructors delivering the courses, so the importance of faculty development activities and incentives cannot be underestimated. The initial phase of this project will focus on expanding, refining, and standardizing the existing HyFlex Faculty Institute. Train-the-trainer and peer mentoring programs will build localized knowledge for sustainability. Grant funding will provide faculty stipends as incentives in the near term, and the university administration will be solicited to provide further incentives beyond the course of the grant.

A HyFlex Virtual Hub will support knowledge building amongst the partner, and other, institutions. Future phases will continue to build out sections with updated materials, research results, and galleries of examples to create an extended community of practice around HyFlex course delivery.

Immediate technical scaling will begin by examining the existing technical infrastructures of the partner campuses to determine their needs for supporting HyFlex course delivery. In the initial phase, SF State will partner with Echo360 to provide the lecture capture infrastructure. Other tools will be made available per the needs on each campus. Future phases will promote the HyFlex model in a more general sense, agnostic of tools or

platforms. Savings generated from automation of staff activities, along with increased enrollments and improved student success, can subsidize existing infrastructure.

To address faculty resistance, immediate scaling will communicate the research supporting the upside and benefits of the HyFlex delivery approach, while also identifying points of concern that require further investigation. Student achievement will be measured and monitored in short-term and longitudinal studies, based on the Educause Learning Initiative's documented Seeking Evidence of Impact assessment plan.

Q8. Which of the following descriptions best fits your proposal?

- Our proposal targets exclusively young adult learners under the age of 26 (i.e., any other learners will only be incidental beneficiaries).
- **Our proposal targets primarily young adult learners under the age of 26 (i.e.,such learners will be a majority of the population served).**
- Our proposal targets a variety of students, including at least some young adult learners under the age of 26.
- None of the above.

Q9. Please check 'Yes' if your proposed solution will target high-enrollment, low-success developmental and/or general education courses—core, so-called "gatekeeper" courses—or similar courses in high-demand occupational programs such as **business**, criminal justice, **information technology**, and/or **nursing** and allied health.

- **Yes**
- No

Q10. If you checked 'Yes' in the last question, list the course(s) you will target.

Health & Human Services:
*Nursing
*Kinesiology

Science:
*Biology – Human Sexuality
*Chemistry – General Chemistry I: Concepts
*Math – Business Calculus, Elementary Statistics

Business:
*Hospitality & Tourism Management
*Information Systems
*International Business
*Marketing
*Organizational Behavior

Other:
*Developmental Psychology
*Basic Music

Q11. Briefly discuss the outcomes you anticipate achieving by the end of the grant, and how they align with the NGLC outcomes of interest: scaling outcomes; student outcomes (completion, persistence, content mastery, mastery of learning outcomes); and cost-effectiveness outcomes. If your project receives NGLC funding, what would be the maximum (realistic, not theoretical) level of success you would expect to accomplish with NGLC funds? What would be your minimum expectations for success? What would be your most likely level of success? Please bear in mind that, if your application is selected, your answers here may be used to inform your project's eventual evaluation. (2,000 characters)

Scaling Outcomes: This project seeks to scale adoption and support of HyFlex course delivery across 7-10 diverse university partners within the largest university system in the United States, the California State University. Scaling will be measured by the number of participating institutions [min=5; max=10]; number of lecture halls or rooms equipped with the necessary technical infrastructure [min=15; max=30]; number of faculty trained and prepared to deliver HyFlex courses [min=50; max=100]; number of courses delivered in HyFlex [min=30; max=100]; number of students enrolled in HyFlex courses [min=10,000; max=20,000]; number of institutions able to access HyFlex support materials available in virtual hub [unlimited].

Student Outcomes: Though difficult to evaluate in the first year, this project seeks to improve student access and performance in bottleneck and gateway courses using the HyFlex approach. Compared to previous years, student access will be measured by total student enrollment in these courses [min=20% increase; max=100%]; improved performance and deeper learning of outcomes, measured through a reduction in D's, W's and F's [min=8% reduction; max=15%]; and successful course completion [min=5% increase; max=10%].

Cost Effectiveness Outcomes: This project will scale a proven Moodle LMS- Echo360 lecture capture solution that SF State has refined, and will welcome other technology solutions available on partner campuses. Grant partners will develop shared hosting solutions to share costs and leverage infrastructure, and Echo360 will provide start-up packages for interested campuses. Cost-effectiveness will be measured through comparisons between cost of ownership for collaboratively hosted solutions versus individual implementations [min=10%; max=40%]; total instructional cost of delivering courses compared to traditional means [min=10%; max=40%]; total cost of providing faculty development individually versus the shared institute model [min=10%; max=75%].

Q12. Briefly discuss how your proposed plans, procedures, and activities align with the objectives and criteria detailed in the "Core Values and Criteria" and "Challenge Areas" sections of the NGLC Wave 1 RFP (i.e., both general objectives criteria and those specific to the challenge area to which you are applying). Address explicitly any objectives or criteria to which you cannot or will not conform, or that you believe do not apply.
(2,000 characters)

HyFlex is an innovative blended learning solution that provides student choice—participating face-to-face, online, or both—via equivalent, not identical, learning experiences. Students master deeper learning outcomes through multiple pathways to reinforce core concepts, such as a solid base of intermingled resources that correspond to multiple intelligences. Universal design for learning strategies support all learners, including second language learners and students with disabilities. Instructors provide scaffolding through activities like reflections or peer-learning forums.

HyFlex contributes to the facilitating graduation initiative in several ways. Increased access to classes removes classroom space or time conflict limitations. Increased student performance and completion result from unlimited student access to content and activities to master course concepts; faculty intervention and feedback prompted by learner analytics; and student self-determination to align with preferred learning approaches. Student persistence is improved as students don't need to drop classes due to illness, work, travel, or other conflicts. Earlier completion of graduation requirements means more timely progression to degree.

HyFlex brings about cost savings through reduced demand for facilities. Programs can ramp up to online without providing up-front curriculum development. Automating recording, captioning, and integrating lectures in LMS mean it can be scaled without adding more staff.

Grant funds will support faculty development to ensure educational effectiveness through a team-based faculty support model that starts at a HyFlex Institute. The project team will create a Virtual Hub to share openly available faculty development resources and a gallery of examples. Stipends will be provided for faculty to redesign courses as HyFlex offerings, and then become peer mentors. Grant funds will also support technical development to ensure reliability, scalability and cost-effectiveness.

Q14. What evidence do you have—direct or indirect, formal or informal—that your solution has the potential to achieve the transformative outcomes sought by NGLC? What evidence, if any, is still lacking, and how would you propose to acquire it in the process of scaling your solution using NGLC funds? (2,000 characters maximum)

Blended learning effectiveness: Blended learning has been proven to be more effective than either face-to-face or purely online. The Open Learning Initiative (OLI) found that for the same outcomes, accelerated blended learning required half the student's time, and more than doubled course completions compared to classroom instruction (Lovett, Meyer, & Thille, 2008). In a meta-analysis of online learning studies, Means et al. (2010, p. ix) found that "[t]he difference between student outcomes for online and face-to-face classes…was larger in those studies contrasting conditions that blended elements of online and face-to-face instruction with conditions taught entirely face-to-face."

Learner choice in HyFlex: Learner choice has been proven to be effective in increasing student motivation and performance. Candy (1991, p. 242) found that "learner control is…a complex entity involving control over multiple aspects such as objective-setting, content, method, sequence, pace and evaluation of learning outcomes." HyFlex is an innovative approach to blended learning that has proven to be effective in increasing student satisfaction, engagement, and access (Beatty, 2007; Cole & Robertson, 2006).

HyFlex Student Evaluations: Given a choice through the HyFlex format, graduate students in a research study at SF State typically replied with appreciation for the flexibility offered by this delivery method (Beatty, 2007). They also expressed a clear preference for classroom delivery, if it is available and convenient to them. Almost all (86%) stated a preference for the HyFlex course design--ability to create their own blend of online and classroom participation--compared to strictly classroom or online delivery. This project proposes to research the potential benefits of applying HyFlex practices to large format classes—especially those that act as bottleneck courses preventing students from completing degree goals on time due to insufficient capacity or high failure rates.

Q15. As noted in the NGLC Wave 1 RFP, a primary objective of this wave of funding is the elimination of redundancy and unnecessary reinvention through the wide-scale adoption of proven solutions. Briefly, discuss how your proposed solution and scaling plan will leverage existing resources—created by you and/or others—to avoid duplicating previous efforts and to break the grip of "not invented here." What interoperability standards or protocols will you observe, if any? How will you overcome formal and informal resistance to "outside" innovation in your target institution(s)? How will you make it easier for others to adopt, in turn, the solution(s) that you deliver?
(2,000 characters)

Although HyFlex has attracted attention from Sloan-C and ELI as a novel and effective idea in blended learning, HyFlex has been an established practice at SF State for the past six years. Lessons learned from technological, pedagogical and organizational perspectives will enable partner campuses and others to capitalize on commonly prepared and shared resources and support structures. Some faculty resistance to the HyFlex model has stemmed from apprehension over the intellectual property of the recorded lectures; the effectiveness of online learning in general; the additional workload a course-redesign presents; and adequate compensation for teaching large classes. To address resistance, findings from publications, conference presentations, and student surveys will be shared in the proposed Virtual Hub, along with sample educational

policies on quality of education, faculty and student roles, intellectual property, compensation, and other topics.

As a leader in several academic technology communities—Moodle LMS, Echo360 (lecture capture), and ePortfolios, SF State has developed partnerships (CSU Moodle Consortium) that it may leverage to increase the scope of grant activities. SF State also works with vendors, and built a Moodle integration funded by Echo360 which directly facilitates HyFlex course delivery and alleviates some faculty concerns about intellectual property of their recorded lectures. In the initial phase, SF State will partner with Echo360 to provide lecture capture infrastructure. Echo360 will provide start-up packages at a fraction of market cost to interested participant campuses. Other tools will be made available per the needs on each campus. Future phases will promote the HyFlex model in a more general sense, agnostic of tools or platforms. Savings generated from automation of staff activities, along with increased enrollments and improved student success can pay for next round and subsidize existing infrastructure.

Works Cited

(to include as separate bit.ly-linked document, approved with Educause)

Beatty, B. (2007, October). Hybrid Classes with Flexible Participation Options – If you build it, how will they come? *Proceedings of the Association for Educational Communication and Technology International Conference, Anaheim, CA*.

Beatty, B. (2008, September). Using the "HyFlex" Course and Design Process – A Sloan-C Effective Practice. (2008) Available online: http://www.sloanconsortium.org/node/1159 Accessed September 30, 2008.

Beatty, B. (2010, September). Connecting Online and Onground Learners with HyFlex Courses. Invited plenary session, Educause Learning Initiative (ELI) 2010 Online Fall Focus Session: Blended Learning: The 21st Century Learning Environment, online.

Candy, P.C. (1991). *Self-direction for lifelong learning: A comprehensive guide to theory and practice*. San Francisco: Jossey-Bass.

Center for Applied Special Technology [CAST] (1999-2001). Universal Design for Learning. Available Online: http://www.cast.org

Cole, J. & Robertson, B. (2006, Apr-May). Using Market Segmentation to Develop a Large Section, Web-enhanced Survey Course. *Innovate: Journal of Online Education, 2*(4). Retrieved on 18 November 2010 from Innovate site: http://innovateonline.info/

Lovett, M.; Meyer, O.; & Thille, C. (2008). The Open Learning Initiative: Measuring the Effectiveness of the OLI Statistics Course in Accelerating Student Learning. *Journal of Interactive Media in Education, 14*. Retrieved on 18 November 2010 from JIME site: http://jime.open.ac.uk/2008/14

Means, B.; Toyama, Y.; Murphy, R.; Bakia, M.; & Jones, K. (2010, September). Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and

Review of Online Learning Studies. Washington, DC: U.S. Department of Education, Office of Planning, Evaluation, and Policy Development.

Additional References

Beatty, B. (2007, June). Transitioning to an Online World: Using HyFlex Courses to Bridge the Gap. Proceedings of the ED-MEDIA 2007 World Conference on Educational Multimedia, Hypermedia, and Telecommunications, Vancouver, Canada.

Beatty, B. (2009, October). Student Self-reflections on Learning in a Hybrid Course Environment: Do Participation Mode Differences Lead to Differences in Reflections? Paper presented at the Association for Educational Communication and Technology International Conference, Louisville KY.

Beatty, B. (2009, October). Universal Access or Simple Accommodation? Fully Accessible Hybrid Courses are within Your Reach. Paper presented at the Association for Educational Communication and Technology International Conference, Louisville KY.

Beatty, B. (2008, June). Using Moodle to HyFlex. Presentation at the 2008 Moodle Moot San Francisco, South San Francisco, CA.

Beatty, B. (2007, November). Blended Learning for Students with Choice: The HyFlex Course and Design Process. Paper presented at the Thirteenth Sloan-C International Conference on Online Learning, Orlando, FL.

Beatty, B. (2007, October). Hybrid Classes with Flexible Participation Options – If you build it, how will they come? Paper presented at the Association for Educational Communication and Technology International Conference, Anaheim, CA.

Beatty, B. (2007, June). Transitioning to an Online World: Using HyFlex Courses to Bridge the Gap. Paper presented at the ED-MEDIA 2007 World Conference on Educational Multimedia, Hypermedia, and Telecommunications, Vancouver, Canada.

Beatty, B. (2006, October). Designing the HyFlex World- Hybrid, Flexible Classes for All Students. Paper presented at the Association for Educational Communication and Technology International Conference, Dallas, TX.

Beatty, B. (2008, 2010). Blended Learning: Using the HyFlex Course and Design Process
An invited one week online workshop and seminar for education professionals associated with Sloan-C. Conducted March 24–28, 2008 (repeated by request March 2010, June 2010, and October 2010). Available online at http://community.sloanconsortium.org/

Freed, J. (2009). What students really want: A study of learner opinions of interactions in online community college courses. Unpublished 3355334, Capella University, United States -- Minnesota.

Gabriel, T. (2010, November 4). Learning in Dorm, Because Class Is on the Web. *New York Times*. Retrieved on 18 November 2010 from New York Times site: http://www.nytimes.com/2010/11/05/us/05college.html?partner=rss&emc=rss

Kassop, M. (2003, May/June). Ten ways online education matches, or surpasses, face-to-face learning. *The Technology Source*. Retrieved on 18 November 2010 from The Technology Source Archives site: http://technologysource.org/article/ten_ways_online_education_matches_or_surpasses_facetoface_learning/

Masie, E. (2010, October 31). Forum: Has the Quality of Online Learning Kept Up With Its Growth? *Chronicle of Higher Education*. Retrieved 18 November 2010 from Chronicle of Higher Education site: http://chronicle.com/article/Forum-Has-Online-Learnings/125117/?sid=at&utm_source=at&utm_medium=en

(2006, July). Seven Ways to Improve Student Satisfaction in Online Courses. *Recruitment & Retention in Higher Education, 20*(7), 7-7.

Sun, P.-C., Tsai, R. J., Finger, G., Chen, Y.-Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. [doi: DOI: 10.1016/j.compedu.2006.11.007]. *Computers & Education, 50*(4), 1183-1202.

Uzun, A. & Senturk, A. (2010). Blending makes the difference: Comparison of blended and traditional instruction on students' performance and attitudes in computer literacy. *Contemporary Educational Technology, 1*(3), 196-207.

Zhang, Z. (2007). An investigation of the preferred learning practices of culturally diverse students in an online distance education environment. Unpublished NR31973, The University of British Columbia (Canada), Canada.