

## COVER PAGE

### Contact Information

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### List of Participants:

California State University, Northridge (include letter from Provost indicating support for the application)

**Application Abstract** (250 words or less) -- describing key changes since January 2014

myCSUNtablet: Mobilizing and Digitizing Learning for Tomorrow's Curriculum

In Fall 2013 California State University, Northridge embarked on the first one-to-one tablet initiative in the CSU system to help modernize the delivery of the university's curriculum to meet students' needs. The initiative, called "myCSUNtablet" is paired with an eText initiative to produce free or low-cost, faculty authored digital textbooks for delivery on tablet devices. The initiative's three goals are to increase student engagement, improve the quality of instructional materials, and decrease costs for students. By Fall 2014 the initiative had expanded to eight departments, 70 faculty, and 2,500 students; enrollment had totaled 5,692. Seventy faculty members had signed up to create an eText; 30 have been produced. The initiative is expected to ultimately improve graduation rates and time-to-degree by providing customized instructional materials and empowering students to earn better grades. Now in its second year, the initiative has made significant progress meeting its goals, and is evolving along with the rapid evolution of mobile devices and content creation software. Clear metrics and a comprehensive approach to assessment ensure rapid feedback for the purposes of continuous improvement. Next steps include continued expansion to additional programs at CSUN and outreach to other California institutions including other campuses within the CSU system, and feeder institutions including local community colleges and K-12 institutions for knowledge sharing and technology transfer. By encouraging a culture of innovation, the initiative serves as a lever for larger and more over-arching attempts to accelerate modernization in curriculum delivery which includes redesign for hybrid, online or flipped instruction, personalized learning and competency-based education.

January 6, 2015

Committee on Awards for Innovation in Higher Education

Dear Committee Members:

I assure that I have read and support this application for an award. I understand that if this application is chosen for an award, my institution will be required to submit, for approval by the Committee on Awards for Innovation in Higher Education, a report indicating proposed uses of the award funds and, as the fiscal agent, will be responsible for distributing funds to any other participating entities.

I also understand that, if this application is selected for an award, my institution will be required to submit reports to the Director of Finance by January 1, 2018, and by January 1, 2020, evaluating the effectiveness of the changes described in this application.

Sincerely,



Dianne F. Harrison, Ph.D.  
President

DFH/HH/eo

### **Question #1 - Context - Goals (1 page)**

California State University, Northridge's tablet initiative, called "myCSUNtablet" (see [website](#) and [video](#)) began in Fall 2013 with the goals of (1) increasing student engagement; (2) improving the quality of instructional materials, and (3) decreasing the costs of instructional materials for students. These three goals would be achieved through adoption of active learning pedagogy and the creation of customized, faculty-generated eTexts (see [video](#)), and other forms of digital content that instructors deliver on tablet devices. The initiative is a "one-to-one" initiative, meaning every student has a tablet which they take home so they can learn and access the curriculum anywhere, anytime. The myCSUNtablet initiative was the first such tablet initiative in the California State University system.

The myCSUNtablet goals are ultimately intended to translate into greater numbers of students graduating in four years, faster time-to-degrees, and improved transfer rates. The logic is that students who are more engaged with the material, their peers and the instructors, both inside the classroom and out, who can study highly relevant, customized digital content created and curated by enthusiastic faculty, who can receive regular, real-time feedback on their performance, and who can access learning materials anywhere, anytime through their mobile devices will earn better grades and persist through classes, thereby increasing passage rates and time to graduation.

The goals of the myCSUNtablet initiative were developed as a result of two strategic planning processes that guide academic technology innovation at CSUN. In 2010, Information Technology formed the IT Vision @2015, which was recently updated to [IT Vision @2017](#). The first of four themes in the Vision is eLearning, which highlights the incorporation of tablet devices and digital content as key strategies to adopt innovative, student-centered pedagogies to improve student learning.

The initiative's goals were [formalized through a presidential initiative](#). In November 2012, CSUN President Dianne F. Harrison and members of her extended cabinet, including vice presidents and college deans, visited Apple's headquarters in Cupertino to explore the potential of tablets in higher education. Convinced that tablets could help CSUN's population learn better, during a January 2013 faculty retreat, President Harrison invited faculty to integrate tablets into teaching.

By Fall 2013 the myCSUNtablet initiative was launched with six departments, and 24 faculty teaching 1,223 students. Enrollment rose to 1,718 in Spring 2013. By Fall 2014 the initiative had expanded to eight departments (biology, journalism, psychology, health sciences, physical therapy, special education, kinesiology, liberal studies), and student had enrollment reached 2,751. As part of the initiative, faculty are invited (and incited) to create customized digital content for delivery on tablets as part of a parallel but aligned [eText initiative](#). By 2014, 70 faculty had signed up to create a born digital eText for tablet delivery. eTexts are rich in multimedia and interactivity to encourage engagement, and are provided to students for free or low cost, resulting in dramatic cost savings.

## **Question # 2 - Context - Statistical Profile (2 pages)**

California State University, Northridge (CSUN) is the largest of the 23 campus in the California State University system with a Fall enrollment of 40,131 students. It is the only four-year institution of higher education serving the San Fernando Valley in north Los Angeles County, whose 1.8 million residents are 47% Latino.

Fall 2014 enrollments are 45.3% traditionally underserved: 39.5% Hispanic, 5.4% African-American, .2% American Indian/Alaskan Native, and .2% Native Hawaiian/Pacific Islander. The remainder are 25.9% White, 10.9% Asian, 3.2% Other, 6.0% Unknown, and 8.7% International students studying abroad. In 1997, the US Department of Education certified CSUN as a Hispanic-Serving Institution, and in 2008, the campus was certified as an Asian American Native American-Pacific Islander Serving Institution, reflecting our more than 10% population of Asian students.

In Fall 2014, 47% of students received Pell assistance. During the 2013-14 academic year, there were 27,442 student recipients of financial aid awards, totaling more than \$312 million. In Fall 2014, 55.2% of the students are women and 44.8% are men.

CSUN students are also largely commuters. Almost two-thirds (62%) of CSUN freshmen commute to campus. By the time they become seniors, this number rises to 84%.

In Fall 2014, 3.7% of the student population had registered with a disability. CSUN's students with disabilities population has increased 38% in five years. CSUN has long prided itself on equal access to the disabled and is nationally known for its [National Center on Deafness](#). CSUN students who are or were foster youth have seen an 86% increase over five years to 497 in Fall 2014. The veteran population has grown more than 40% over the last five years with 519 attending CSUN in Fall 2014.

### **Factors Affecting Graduation Rates**

The four-year graduation rate for all CSUN students is 11 percent, compared to 7 percent for traditionally underserved students and 7 percent for low income (Pell grant) students. This relatively small difference suggests that all CSUN students face time and financial constraints to completing a bachelor's degrees in four years. Many students must work full or part-time while attending the university, which impacts the number of units they can take each semester and the time they can dedicate to their studies. When they get to college, many discover they are not necessarily ready for the course work upon entry. The need for remedial classes can put students behind from the start of their college career, thus slowing their time to graduation. In addition, underprepared students might need to retake certain courses if they do not pass on the first attempt.

Despite tremendous diversity in ethnicity and financial status, there is one thing all CSUN students have in common: they are tech-savvy, living in a digital, social networked age of YouTube, Facebook, and Twitter. Ninety-six (96%) of CSUN students own a smartphone and

57% of students own a tablet, up from 29% the previous year. In the US, multiple device ownership is now the norm and we are a multi-screen society. Tablets are now part of curriculum delivery in elementary, middle and high schools, and are prevalent in the workforce — raising expectations that they will also be utilized in higher education.

For these reasons, we believe that the myCSUNtablet initiative, encompassing both tablets and digital content creation, can help all CSUN students. Mobile devices are ubiquitous in students' lives, but largely absent from the higher education classroom. Once incorporated, they can enable students to learn “anywhere, anytime”, especially if they are using faculty-developed, customized instructional materials that make learning more relevant and engaging. Mobile devices enable active learning (see [video](#)) in class, which helps all students to avoid falling behind and empower themselves to learn. Active learning works through (1) increased engagement with the material, peers and the professor; (2) real-time and more frequent frequent feedback to students about their progress, and (3) accountability for in-class learning. As CSUN faculty who teach with tablets have noted, “students can no longer escape learning.” Outside of class, tablets increase access to content and connectivity that allows students to stay engaged with their peers, the instructor, and the material. Tablets, once amortized, will save students money through the use of low-cost apps and eTexts. By doing better in class and becoming more motivated, students will be more likely to persist and ultimately graduate, thereby improving both time-to-degree and graduation rates.

**Question # 3 - Innovations - Prior to January 10, 2014 (2 pages)**

To achieve the goals of increased student engagement, improved quality of instructional materials and decreased cost, CSUN launched myCSUNtablet, which includes two initiatives -- tablets as the tool of delivery, and eTexts as digital content. Each initiative required supporting changes in policies, practices and systems.

**Tablet Initiative.** The tablet initiative initially relies on a cohort model to increase chances of success. To be accepted into the initiative, departments had to agree to adopt tablets in a three-course sequence and to utilize free or low-cost digital materials that meet ADA accessibility requirements. In Spring 2014, six departments (majors) were accepted into the initiative: biology, journalism, health sciences, physical therapy, kinesiology, and liberal studies. Apple iPads were the tablet of choice because they offered the best ecosystem of quality hardware, software, apps, and the Mac platform offered a free software package called iBooks Author that faculty could use for content authoring. iPads were also the most advanced in terms of ADA accessibility. Tablet purchases were eligible for financial aid, and a two or three-semester payment plan was offered to increase affordability for students. The first 500 students who purchased iPads from the university bookstore, which also served as an authorized repair center, received free Apple Care. For comprehensive information about the initiative, please see the [myCSUNtablet webpage](#).

**eText Initiative.** Faculty are subject matter experts who want to reduce costs for students. To capitalize on this opportunity, CSUN faculty were offered release time to create an eText for delivery on tablet devices. Faculty-authored eTexts are customized for the course and are closely aligned with the instructors' lecture material, often containing recorded lectures, interactive quizzes for self-paced knowledge checks, personalized media and links to outside resources. They are "born digital" and never out of date. Faculty retain intellectual property rights. However, if the texts are sold on campus, they must either be free to students, or revenues generated by sales beyond CSUN must return to departments or colleges to avoid conflict of interest. Faculty use several software packages to create eTexts including iBooks Author, Softchalk, or PDFs to ensure that the eTexts can work on any platform. All eTexts had to be captioned for ADA accessibility. Please see the [CSUN eText bookshelf "bookshelf"](#) to view all the eTexts that have been developed to date. The bookshelf provides titles, authors, classes used, synopses, and availability information.

Assessment efforts conducted after the first semester of tablet use indicate that the initiative is meeting its goals of increasing student engagement and enhancing the quality of instructional materials. The tablet initiative is starting to decrease costs and in-class student performance. While the initiative has not yet systematically improved retention and graduation rates, these effects will presumably occur once tablets, digital content, and active learning techniques have been fully scaled up and become effectively adopted by a critical mass of faculty and students across campus.

**Increased student engagement.** Student surveys indicated that tablets were being used in myriad ways including to access the internet (94%), access the learning management system (88%), take a quiz (85%), use apps (81%), take pictures (79%), take notes (72%), take an exam (71%), process email (70%), annotate slides (68%), watch a video (64%), read an eText (59%), and draw pictures (59%). Overall, 59% of students in tablet classes indicated they can access course materials more effectively, 55% said they use a tablet to study on the go, 46% said the tablet has made them more organized, and 44% reported that they felt more engaged with the material in tablet classes.

**Improved quality of instructional materials.** By January 2014, 70 faculty had signed up to receive modest incentives (equivalent to a one-course buyout) to produce eTexts which ranged from digital lab manuals to full-fledged, multimedia textbooks. About 10 eTexts had been completed, and were starting to be used in myCSUNtablet classes. See Section 4 for results of the eText evaluation that was conducted in Fall 2014, when more eTexts had been completed and were being used in classes.

**Improved student learning outcomes.** By January 2014, assessment had been conducted in a number of tablet classes, suggesting that tablet use could help students attain learning outcomes as measured by quiz scores and enhanced skills and abilities (see Question #4 for examples). With assessment being conducted every year, more results were available by the end of 2014.

**Reducing costs.** Right now the tablet and eText initiatives are overlapping, but separate (not all faculty teaching with tablets are creating eTexts, and not all faculty creating eTexts are in the tablet initiative -- overlap is about 20%). As the two converge, however, the savings produced by using free or low cost eTexts should rise and students in the tablet initiative will get the best of both experiences.

The CSUN tablet initiative has produced a number of early learnings from both our successes and failures, which will guide future actions for the initiative:

**Tablets are a tool, not a panacea.** iPads have the potential to increase student comprehension and performance when used in ways that logically enhance student understanding, skills or abilities (e.g., for active learning, or multimedia production). Tablets may not be the best tool to help learning in all situations (e.g., writing, spreadsheets). Moreover, student perceptions of the value of tablet use in the classroom is a direct function of faculty levels of skill and enthusiasm. For these reasons, bolstering professional opportunities for faculty will be critical going forth.

**Faculty face a steep learning curve.** Teaching effectively with tablets requires fundamental changes in teaching strategies and considerable learning on the part of faculty -- for example, to find apps, manage files in the cloud, and use iPads for active learning. As a result, faculty want time to redesign their courses to fully embrace “tablet pedagogy.” Ample professional development development and ongoing support for faculty will be critical moving forward.

#### **Question # 4 - Innovations - Since January 10, 2014 (6 pages)**

Between January 2014 and December 2014, additional changes were implemented to help the initiative meet its goals. To some degree, these goals are starting to be met, however meeting them fully will require support to fully expand the initiatives to the campus and beyond.

**Bolstering Professional Development.** Faculty buy-in and skill is critical to the success of the initiative. To help faculty gain competence and confidence more quickly, a multi-faceted professional development “track” was established that included the following elements:

- **Tablet Academy.** In June 2014 CSUN offered its first myCSUNtablet Academy, a three-day learning experience designed to provide faculty who are new to teaching with tablets the core training necessary to facilitate a tablet course. Upon completing the Academy, faculty are able to design a tablet course, present real-time in class using a tablet, build instructional materials geared for tablet delivery, create collaborative in-class tablet activities, and assess students using assignments and activities.
- **Departmental Liaisons.** myCSUNtablet faculty liaisons are appointed in each department to serve as conduits, internal catalysts and point persons to help their peers with “all things tablet”. They convene internal learning communities and make sure apps are tested for ADA accessibility. They also coordinate a peer visit program in which faculty attend each other’s classes to observe what a tablet class looks like in actuality.
- **Expanded Learning Communities.** Each department’s faculty liaison coordinates a learning community within their department to share best practices, vet new apps and offer support with assessment. These communities allow faculty to coordinate peer visits. In addition, larger cross-departmental sessions, or “open mics,” are held during the semester to bring all myCSUNtablet faculty together to share exercises and teaching strategies with tablets. A learning community was also created to support faculty assess and gather evidence about the impact of tablet use and how it might enhance student learning.

**Untethered Teaching.** Once faculty realize they can use tablets as mobile whiteboards, many wish to be able to “roam” around the class, interacting with students to encourage attention, engagement, and learning (see video called [Untethered Teaching](#) for illustration). Enabling this required creating safe ways for faculty to project from their iPads wirelessly without letting unwanted individuals from “hijacking” the projector. connect their iPads. The ultimate goal is to enable students to share their screens and project to the front of the room as well; however, creating this capability will require additional wireless configurations.

**Technology Transfer.** In response to requests from sister CSU campuses, we began hosting visits, offering webinars, and visiting surrounding universities (e.g., Fresno State, CSU Dominguez Hills) to give talks about the initiative and meet with campus representatives who were interested in establishing a tablet initiative of their own. We also began laying plans for a

Summer 2015 “mobile learning” workshop and professional development to which surrounding surrounding CSUs and feeder Community Colleges would be invited.

### **Achieving the Goals: Realized or Anticipated Impact**

Research shows that the single greatest reason tablet initiatives – or any large-scale technology initiatives for that matter – fail is because of lack of training, support, and ongoing professional development for those who are expected to implement the new practices. The typical pattern is that initiatives launch with fanfare and then languish or implode because individuals at the front lines are not supported, prepared or inspired to implement the innovation. This outcome is even more likely when the implementers are secure professionals (i.e., tenured professors) who can withstand the "initiative of the month".

We are attempting to sustain the initiative and produce a compelling results instead. Fortunately we see signs that the investment in professional development and faculty community-building is paying off. Faculty are genuinely excited (despite frustration at occasional technology glitches), about the opportunity to personalize their instructional materials and deliver the curriculum in streamlined and modern ways.

**Tablet Use Cases and Impact:** Below are examples and use cases, gleaned from assessment activities, of how tablet use is changing pedagogy and improving student learning outcomes in a variety of departments

- **Biology.** In an introductory biology class, a professor takes her class outdoors to the botanic gardens to learn about plant taxonomy. Students take pictures of plants with their iPads. They then open the images and label the parts (using an app called Explain Everything) to help them learn terms associated with plant structures. They also draw phylogenetic trees (trees of life) in class along with the professor, and then turn them in before leaving class to be spot-checked by the professor. This active learning technique has been shown to consistently raise quiz scores and increase retention of material for the final exam.
- **Biology.** In a genetics class, students use iPads to draw Punnet Squares (to predict genetic crosses) along with the professor in class, take pictures of their drawings, and turn them in as “proof” of effort, and evidence of participation. This active learning technique has been shown to enhance student understanding as measured by quiz scores.
- **Health Sciences.** Public health students visit neighborhoods to study the determinants of community health (e.g., parks, air quality, food options) and use the iPad to capture photos and videos, which they then publish in the public-facing Storehouse app. Before joining the myCSUNtablet initiative, students were limited to just discussing the determinants of health. With the iPad they can visually investigate, document, and analyze the health and social practices of their neighborhoods and collaborate on the findings with other students to spark discussion and change.

- **Kinesiology.** In athletic training classes, students observe normal and abnormal movement patterns. In the past, they used their eyes to make qualitative observations and subjective judgments. Now they record movements on the iPad with video and, using an app called Ubersense, they are able to conduct motion analysis and measure joint angles. This results in quantitative observation and the ability to make objective judgments. In turn, the accuracy enhances the students ability to improve their subjective judgments by more accurately training their eye.
- **Journalism.** In a news practicum, the iPad gave journalism students the flexibility to complete a variety of assignments and to personalize their learning experience. Students were no longer bound to only write stories or shoot photos. With the iPad, they used video, audio or social media in their storytelling in order to expand their skills and become more workforce ready upon graduation. Based on a longitudinal study, the number of “newspaper ready” multimedia pieces that students produced increased 50%.
- **Journalism.** In a documentary photojournalism class, students tackled the difficult subject of documenting homelessness. Throughout the semester, they captured real-life images and multimedia and then edited the content using iPads. The culminating experience had students collaborate on the creation of an iBook as the final class product. This book, called *Displaced*, [publically available for free in the iBooks Store](#). The projects achieved a program learning outcome which seeks to have students apply tools and technologies appropriate for the news media professions in which they work to communicate for and with diverse publics.
- **Physical Therapy.** A professor’s iBook has had a significant impact on her physical therapy classes (see [video](#)). The book, and its use in eLabs in and out of class, caters to all types of learners: visual, auditory and readers. In the past, students could only observe a demonstration one time and they had to rely on their notes for recall. Now, they can watch videos in the iBook repeatedly and at their leisure to review and better absorb the material. In addition, they use tablets to capture videos in order to do postural and movement assessments.
- **Special Education.** A professor models the use of apps such as Nearpod and Explain Everything with her special education students, who in turn can apply what they have learned when in their own student-teaching settings. In addition, iPads are used to record classroom activity for later review by the student teachers — giving tomorrow’s teachers insight into how to employ evidence-based learning.

**Ethnography.** These findings were supported by an ethnographic study that was conducted in Spring 2014 by the Anthropology Department (which was not in the initiative). Trained graduate students visited tablet courses and interviewed instructors about their classes. Results found:

- **Benefits of Tablet Use.** Tablets can enable classrooms to become more flexible, help teachers and students work together on problems and complex processes in class, hold students more accountable for their own learning, and encourage students to participate

more actively in class. The devices can give teachers and students a more efficient means of organizing information, foster student engagement, and provide cost-savings to students who no longer need to purchase expensive printed materials. Finally, using iPads can prepare students for working with digital media in future careers.

- **Drawbacks of Tablet Use.** Tablet use poses challenges to students and faculty as well. iPads may involve a steep learning curve and demand significantly more faculty time and effort than expected for conventionally taught courses. iPad-related technology problems such as intermittent Wi-Fi access, tethering issues, students writing without keyboards, and inconsistency in student iPad versions can constrain learning and teaching effectiveness. Students can have varying technological readiness, leading to differing capacities to use iPads effectively in class. iPad-based exams can also cause anxiety during test-taking. Finally, requiring iPads raises additional questions of tablet standardization and cost.

**eText Use and Impact.** By December 2014, 25 born-digital eTexts had been finished and were available on the CSUN eText workshop. Books contain audio, video, captured lectures, interactivity, and knowledge checks. Types of eTexts ranged from lab manuals (48%) to entire textbooks (26%) to supplementary material (26%). 97 percent were being offered for free to CSUN students, and 92 percent of faculty said they would be happy to share their eTexts to the world once they were finished.

- **Cost savings.** eTexts were saving an average of \$50 per student per year, and had saved an estimated \$161,000 to date. In one biology class, students using a faculty-created eText instead of a traditional textbook saved 228 students a total of \$31,236.
- **Availability.** Many faculty were already, or had plans to, offer eTexts publically; some were not because they contained proprietary material or copyrighted material used under the TEACH act, had not yet been captioned, or were used as strategic differentiators. In Fall 2014 the first two faculty-authored iBooks (*Northridge Natural History* and *Displaced*) were published in the iBooks Store.
- **Faculty and student satisfaction.** The majority of faculty were happy about having written an eText and reported that their students appreciated the customized content. One faculty member said, "The end product was extremely beneficial to the student and has energized my teaching." Another said, "Students have been overwhelming pleased with the content, style and delivery, not to mention cost." A third said "I received the highest student evaluations of my teaching in this course when I used my book on the iPad this year, so I am pleased with that result!" Several faculty have polled their students and received significant praise for the convenience, alignment, and relevance of the digital textbooks. Faculty did, however, indicate their desire for eTexts to contribute to their retention and promotion (which is problematic because in many departments, textbooks do not count as scholarly activity).

- **Student learning outcomes.** A systematic analysis of the impact of the faculty-generated eTexts on student learning outcomes has not yet been conducted because the eTexts are in varying stages of development. However, early feedback from classes in which they are being used is promising. One faculty reported a 10% increase in his students' learning outcomes as a result of using his Biostatistics textbook ([visit link](#) to download iBook), equivalent to a letter grade increase compared to the previous semester with a traditional textbook.

**Longer-term impact.** Longer term, we anticipate that the bolstered professional development, continued investment in wireless technology to enable untethered teaching and the active classroom, and technology transfer to surrounding California State University systems and especially feeder community colleges will result in increased numbers of students attaining degrees who are achieving them at faster rates.

It may, however, take several years for these effects to become apparent. This prediction is supported by research that shows there can actually be a dip in performance prior to improvement due to the required learning curve and working through early implementation difficulties. Faculty are reengineering their pedagogy to capitalize on digital delivery and mobile devices, and this takes time. Eventually, however, faculty and students will become as used to mobile learning and digital textbooks as they are to using computers and PowerPoint today; at this point, and after a few cohorts of students have made it through to graduation, we will expect to see substantial improvements in numbers of graduates and, time to degree. The early assessment results, which show improved in-class comprehension and retention of material for final exams, are promising indicators of what can be achieved when tablet pedagogy, mobile learning and digital content creation has been scaled.

### **Question # 5 - Innovations - After January 9, 2015 (2 pages)**

A significant number of changes are planned after January 2015 to achieve the vision for high-quality, affordable, mobile learning. Below is a high-level timeline:

- **2014/15:** Add two new departments; (special education, psychology); bring 70 eTexts to fruition; revamp professional development into eLearning; start making apps
- **2015/16:** Add two new departments (philosophy, art history); go device-neutral; expand eText program; start incubating wearable technology pilots in anticipation of the iWatch's launch in 2015; formalize outreach and partnerships; continue app development
- **2016/17:** Add two new departments, encompass more mobile learning with a variety of devices, including wearable technologies, paperless classrooms (eTexts, grading, assignment submissions), ability for students to share back their screens for a fully interactive classroom
- **2017/18:** expand initiative to all freshmen
- **2018/19:** campus-wide adoption of full mobile learning integration

Below are specific strategies we will employ in the next one to two years, along with evidence of institutional commitment and anticipated impact of the changes.

**Saturation strategy (Reaching the late adopters).** As each major comes on board, faculty adopt tablets in waves well known in [diffusion theory](#): first the innovators and early adopters, then the early majority, then finally the late majority and hopefully laggard come aboard. By Spring 2015, it had become clear that in the eight departments, faculty in the first three groups had joined the initiative. Reaching the late majority and laggards would require a new approach known as the “Saturation Strategy”. These faculty will spend 1-2 semesters learning how to teach with tablets first, before requiring them of students. Each new faculty member receives a tablet and is required to attend one full day of professional development, starting in January 2015. They are also paired with an experienced faculty “mentor” for personalized learning, and are required to participate in an ongoing faculty learning community (FLC) and share their experiences at the end of the semester. Judging by the positive reaction to this initiative (44 new faculty have signed up to join), we anticipate that this will succeed in getting the vast majority of faculty in each department on board.

**Device neutrality.** Mobile devices continue to evolve at a relentless pace, with the arrival of not only phablets but also wearable technologies such as the iWatch and Google Glass. This is why the initiative was intentionally named myCSUNtablet, not myCSUNipad. In Fall 2015 the initiative will go “device neutral” meaning the choice of device(s) will be left up to individual departments, as they are in the best position to determine requirements and student needs. Focus will shift from what devices must be able to do, away from the hardware or software specifications themselves. This will create support challenges, as this means various platforms will be used, however, it is an inevitable trend that will ultimately prove necessary and

beneficial. We anticipate that this will broaden support of the initiative as it means that departments that prefer to use Android or Microsoft devices (e.g., for spreadsheeting capabilities) will be able to join and participate in professional development opportunities and beyond.

**App generation.** Digital content creation remains a strategic focus of the initiative. In 2014 we focused on eText development. In 2015 the campus is aggressively entering the world of app development and gamification. Apps are small, customized programs that deliver content in succinct and engaging ways that can be accessed on mobile devices for anywhere, anytime learning. CSUN is in a strategic position because of the confluence of faculty who are subject matter experts who will receive help developing apps and their ability to develop and test them in their own tablet classes. These apps will ultimately become available through App Stores for free distribution to all higher education communities and beyond. We have laid the groundwork for a Spring 2015 “App Jam” that will surface talent and bring together students and faculty from across campus to create apps in an entrepreneurial setting that have the potential to be used worldwide.

**Outreach and partnerships.** We continue to receive requests from CSU campuses, community colleges, and K-12 institutions to share information about the initiative. In Summer 2015 we will host a 1-day workshop and offer professional development to surrounding CSU campuses and Community Colleges, focusing on those that send the largest numbers of students to CSUN, for the purposes of knowledge sharing and technology transfer. CSUN’s Special Education department offers unique opportunities for CSUN to partner with Los Angeles Unified schools to train teachers and work directly with students using tablets in the K-12 environment.

**Consolidated professional development.** In 2015 the various initiatives at CSUN (eText, tablet, hybrid and online course redesign), will be brought under one umbrella initiative called eLearning in recognition of the growing overlap and synergies between them. All, for instance, require that faculty become fluent in the manipulation of digital media – whether text, audio or video, and apply sound instructional strategies to the delivery of their materials so that students actually learn. New eLearning grants will be offered to faculty starting in 2015, and successful applicants (approximately 60) will each go through one of three 1-week eLearning Institutes offered in Summer 2015. It is this Institute which will be offered to surrounding CSU and CC campuses as part of outreach and partnerships.

**Integration with broader instructional strategies.** The initiative represents one element of a broader shift toward student-centered learning that includes the use of learning analytics, flipped classrooms, and mobile learning. This convergence is predicted by the [IT Vision @2017](#) which outlines four priority areas: (1) eLearning, (2) analytics, (3) mobile, online & paperless, and (4) reliable secure technology. The focus on eLearning directly supports tablet and eText as well as hybrid and flipped courses to move the campus toward innovative, student-centered pedagogies. Tablet learning has already proved to drive faculty to utilize the flipped model and it is expected this will grow in the coming years, allowing more class time for hands-on, interactive learning.

**Question # 6 - Innovations - Impact on Cost (1 page)**

The initiative will decrease the average cost to students to achieve a bachelor's degree in several ways.

**eTexts.** According to recent studies and reports, the average student spends more than \$550 a year on textbooks. The cost of eTextbooks being produced by faculty at CSUN are usually free to students. For example, a biology textbook produced by a CSUN faculty member for an introductory biology class and made available to student for free replaced a \$137 textbook she normally used, saving 228 students a total of \$31,236. In a physical therapy class, an eText created by an instructor provided to students for free saved her students \$105 each. With some textbooks costing upwards of \$200, it is easy to imagine the significant cost savings that can be realized as faculty creation of eTexts increases.

**Apps.** Tablets also save students money through free or low-cost apps. Apps are a central feature that differentiate tablets from other computers or laptops. Students use apps to engage with rich multimedia content, to create their own student-generated content, and to increase their general productivity. Apps offer an alternative to expensive software or hardware that might be required of students, especially in lower-division classes. For instance, rather than have beginning journalism students purchase the Final Cut for \$300, they can obtain the iMovie app for free (or just \$4.99) to learn the basic principles of video editing. Apps can replace a long list of things students would otherwise need to buy including still and video cameras, audio recorders, editing software, calculators, maps, GPS tools/navigation devices, compasses, dictionaries and reference materials, calendars and planners, drawing materials and writing instruments, flashcards, research tools, note-taking materials, musical instruments and devices, and televisions and DVRs to name a few. A set of 14 core apps was recommended to faculty at the outset of the initiative for three reasons: (1) provide a "starter kit" that was tested for ADA accessibility; (2) encourage faculty to standardize on a core set of productivity apps for consistency; (3) and encourage the use of free or low-cost apps in order to help reduce costs.

**Paperless.** Tablets are also instrumental in the campus' shift toward a paperless environment. This past year a number of tablet classes experimented with delivering exams on tablets, first trying an app called Examsoft and then shifting to lower-cost Respondus. Given the ability of paperless exams to eliminate stacks of paper exams and scantrons, especially as tablet use infiltrates administration as well, we expect the paper and environmental costs to be significant.

### **Question # 7 - Innovations - Risks and Tradeoffs (1 page)**

The adoption of tablets and eText creation had (and has) some inherent risks and tradeoffs that we continue to monitor, think through, and mitigate on a regular basis.

**Will requiring tablets create a digital divide?** One concern and potential risk at the outset was whether requiring tablets would have the unintended outcome of exacerbating the financial strain on students. However, given that virtually all CSUN students already have smartphones and tablet ownership is rapidly increasing, coupled with the anticipated cost savings from digital instructional materials, we predicted that this would not be the case and that instead requiring a tablet would “level the playing field”.

**Start with freshmen or majors?** An early dilemma was whether to begin requiring tablets of all incoming freshmen or start smaller and focus on majors. The decision was made to start with majors to enable the cohort model and achieve early successes before expanding campus-wide, which would require significantly more support for both faculty and students.

**Who should purchase student iPads?** We did consider whether we should give iPads to students, either subsidizing whole or partial costs (as some other institutions have done). However, we decided to require student purchases not only because this approach was more financially sustainable but also because much research shows that when individuals have a financial stake in their possessions, they take better care of them and appreciate them more.

**Tablets, laptops or smartphones?** While laptops are currently still more prevalent in students’ lives than tablets, they do not match tablets’ convenience, tablets, and multimedia capabilities. Going forth, however, as hardware matures this decision may become moot and phablets or two-in-ones (combined laptops and tablets) may become the device of choice.

**Apple or device-neutral?** An early decision was whether to start with Apple only, or allow students to use tablets from any platform (e.g., Android, Microsoft). We chose to stay with Apple for the first few years because it offered the best and most accessible ecosystem of software and hardware, as well as a free tool (iBook Author) to create eTexts. In the future, the initiative will be platform-neutral.

**Support active learning or not?** Active learning is enormously Wi-Fi intensive and requires substantial investment in the campus wireless network in order to enable hundreds or thousands of students take an online quiz simultaneously at the start of class (common in flipped and tablet classes). While expensive, the investment was necessary and this was considered strategic and dovetailed with other campus-wide investments in technology infrastructure to meet students expectations for ubiquitous Wi-Fi.

**Focus on faculty-generated eTexts, or existing open content?** We chose to focus on faculty creating their own textbooks in order to capitalize on the benefits of customization and faculty enthusiasm. In the future, however, reliance on OER content will increase.

### **Question # 8 - Sustainability - Strengths and Assets for Culture of Innovation (2 pages)**

CSUN is fortunate to have a number of strengths and assets for encouraging a culture of innovation and adaptability that will help sustain the tablet initiative and ultimately help students' time-to-degree through increased student engagement, improved instructional materials, and reduced cost.

**Top leadership.** The initiative began with top-level leadership demonstrated by the President, who set the tone in November 2012 with a visit to Apple headquarters and subsequent invitation for faculty involvement in January 2013. Early in the process, the President assigned co-sponsorship to the Provost and Vice President for Information Technology, who provide strategic and tactical leadership for the initiative on an ongoing basis. These top level teams have expanded to include and actively engage the Associate VP level as well. The initiatives are also an ongoing elements in both the President's strategic plan and Information Technology's [IT Vision@2017](#). Together with other members of the senior leadership team, President Harrison has attended national higher education and technology conferences to present on the initiative's progress and to generate excitement around the incorporation of tablets and other forms of technology into teaching and campus activities to enhance student success. Presentations attended include EDUCAUSE, Sloan-C, AASCU, DET/CHE, and WICHE.

**Institutional collaboration and networks.** Launching the initiative in six months required what many have called unprecedented levels of collaboration ("It took a village" some said) between myriad campus units including Academic Affairs, Information Technology, Administration and Finance, Student Affairs, Police Services, Admissions and Records, the Library, Universal Design, and Academic Assessment and Program Review. Members of the senior leadership team met weekly for the first year to mobilize resources and guide policies and systems into place. Day-to-day management of the initiative is provided by the Faculty Technology Center within Information Technology, which is staffed by a Senior Director of Academic Technology and Director of Instructional Technology who oversee all academic technology initiatives at CSUN and can ensure integration of tablets into other instructional tools such as the Learning Management System and lecture capture technology. The Center received three dedicated staff positions to provide support myCSUNtablet: an instructional designer, instructional technologist, and multimedia technologist, to complement the existing team of instructional designers, faculty fellows, faculty liaisons, and student workers. Substantial resources have also been provided to fund faculty members who serve as tablet liaisons as well as incentives for faculty to engage in course redesign institutes and to develop eTexts.

**External partnerships or resources we are leveraging.** The initiative has leveraged substantial assistance offered by Apple, which early on provided subject matter expertise in finding apps and assistance with faculty professional development. CSUN has also been recognized by Apple as a "Distinguished Program" — recognition which will provide continued momentum for the initiative to expand. To receive the award, CSUN had to demonstrate leadership and commitment in a number of categories by creating a [multimedia iBook documenting the initiative](#) (see Appendix). This status provides valuable opportunities for networking with other progressive

campuses across the nation for mutual learning. Going forward, Apple has pledged to support future forays into content creation, especially in the direction of mobile app generation. CSUN leaders and faculty have also shared best practices and offered advice to other universities and community colleges such as Fresno State, Cal State Dominguez Hills, and San Diego State as they explore or launch initiatives of their own.

**Faculty culture.** Most importantly, commitment is growing within faculty ranks, the most critical ingredient for the initiative's success. Within each of the eight departments exists faculty champions and catalysts who both advocate for mobile delivery of a digital curriculum, and serve as role models by sharing their teaching experiences with others. No influence strategy is greater for faculty than peer-to-peer; thus establishing a network of enthusiastic individuals has been key.

**Campus library.** The underlying shift from analogue to digital learning is supported and reflected by changes in other units as well. In 2014, [CSUN's Oviatt Library](#) renovated the first floor from a traditional stack environment to a dynamic Learning Commons which included an IT Help Center prominently located on the first floor to provide technical support to students. The library also created a Creative Media Studio, or "Makerspace" for students where they can access not just tablets but other desktop computers for the creation of digital content for use in class assignments in beyond.

### **Question # 9 - Sustainability - Strategies for Engaging Stakeholders (1 page)**

Engaging stakeholders is critical to the initiative's long-term success. To date, effort has focused achieving commitment from stakeholders internal to CSUN -- faculty and students. As the initiative takes root, it becomes appropriate to engage secondary stakeholders.

**Faculty.** Faculty were invited to join the initiatives and received incentives and support ranging from an iPad to support for course redesign or eText creation. Options for professional development have also been made a priority as CSUN's Faculty Technology Center and Faculty Development have collaborated to offer a summer academy, ongoing workshops and personalized support. Faculty can now apply for [eLearning Grants](#) to support course redesign or the creation of eLearning content for eTexts or material to support flipped or hybrid courses. Incentives are offered to for faculty involved in a learning community that supports direct assessment of tablet courses. A donation by the Joseph Drown Foundation is funding faculty who want to explore teaching with an iPad during Spring 2015; they will also find support through one-on-one mentorships and faculty learning communities.

**Students.** Various strategies were used to engage students in the myCSUNtablet program. Students heard about the program either through branding or when they first signed up for a tablet class. CSUN chose to brand the initiative to convey campus pride and students were actively involved in the marketing plan and promotions. Student focus groups were conducted, which resulted in the myCSUNtablet brand and a logo was selected out of many options created by a student marketing group. iPads are available for checkout through the Library. The library also implemented a new Creative Media Studio, or "Makerspace," for students where they can use a variety of computers and multimedia equipment to create digital content for use in class assignments and beyond.

**Education agencies or institutions.** CSUN was the first campus in the CSU system to embark on a large-scale one-to-one tablet initiative. Thus early efforts were solitary, but the campus has quickly reached out to surrounding institutions including sister campuses now considering or embarking on tablet initiatives (including Fresno, Dominguez Hills, San Diego). In 2015 we plan to offer offer a 1-day conference and summer professional development opportunities, co-taught by faculty who are leading the initiatives, to UC, CSU or CCC campuses who are interested in partnering or learning from CSUN's experiences to accelerate their own progress. Moreover, CSUN regularly makes presentations at educational conferences (e.g., EDUCAUSE, WCET, DET/CHE) to both share expertise and receive new ideas for improvements.

**Community.** The digital materials produced by the eText initiative are making their way into the public domain. As examples, The first CSUN eText called [Displaced](#), published by Professor David Blumenkrantz's journalism class, was a creative partnership with the San Fernando Valley Rescue Mission (see [video](#)). In addition, an eText called [Northridge Natural History](#), is a documentation of the plants and animals of southern California. Mobile Apps for university-level teaching and learning will ultimately make it into the public domain as well, being release in both the Apple and Android App Stores.

**Question #10 - Sustainability - Financial (1 page)**

The initiative will be sustained within CSUN's existing financial resources until it has become institutionalized as part of faculty and student culture, which is expected to take 3-5 years. Support will be continued for:

**Students.** The initiative was deliberately designed to be self-sustaining from a student perspective. Most students already have tablets or devices which they can use to access the increasing range of digital textbooks and learning applications available on the market. Since tablets are personal devices, maintenance costs are also lower than that of laptops.

**Faculty.** Support for faculty is part of CSUN's fabric. Efforts to scale up faculty support for technology use in the classroom has been underway since a partnership between Academic Affairs and Information Technology produced the Faculty Technology Center, dedicated to supporting faculty with all aspects of technology in teaching and learning. The following ongoing investments will sustain the initiative for the foreseeable future.

- **Tablets for new faculty.** Each new faculty member who joins the initiative receives a tablet, which remains university property but is the faculty member's to use as long as they work for CSUN. Over time these devices will become incorporated into the existing device refresh strategy.
- **Professional development and release time.** Faculty receive on average a one-course buyout to participate in course redesign or content creation efforts, each of which has an expected outcome or deliverable (e.g., redesigned course, eText). Anticipated cost of ongoing support in the form of release time is \$300,000 per year.

**Wireless infrastructure.** Investments in wireless infrastructure will continue for the campus as a whole. The California State University Chancellor's office has set aside base levels of funding for Wi-Fi. However, active learning places greater demands on Wi-Fi than current funding levels allow. We estimate that expanding Wi-Fi capacity to enable active learning capability in all campus spaces will cost \$500,000 over the next five years.

**Staff salaries.** Staff to support the tablet initiative are provided out of existing units at CSUN; namely the Faculty Technology Center, which is part of Information Technology, and Faculty Development, under Undergraduate Studies. The cost of dedicated staff to support the initiative is \$200,000 per year.

**Technology and knowledge transfer.** We anticipate that a 1-day conference and paired week of professional development offered to interested faculty at UC campuses and other CSU campuses will cost approximately \$30,000; the majority of funds needed to provide faculty stipends to teach.

### **Question # 11 - Evaluation - Plan, Quantitative and Qualitative (1 page)**

We use both quantitative and qualitative methods to evaluate whether the tablet and eText initiatives will meet the goals of increasing student engagement, improving the quality of instructional materials, and reducing costs. Some of these analyses have already occurred, and are described elsewhere in this report. Data gathering methods include:

- **Faculty and Student Surveys.** Administered to all faculty and students every year
- **Student Focus Groups.** Conducted every year.
- **Ethnographic Studies.** Conducted initially; results were aggregated and made available in the [myCSUNtablet iBook](#).

**Cost Studies.** Data gathered from the first 25 tablet courses taught in the first year suggest that after the costs of iPads are amortized, tablet use will have saved students on average \$29 per class through the use of low cost eTextbooks and apps. Faculty in the eText initiative reported that their digital creations saved students on average \$50 per class. This savings is expected to increase as more faculty-authored or low-cost eTexts make their way into the courses.

**Student Learning Outcomes.** An online system was established to collect data on outcomes that ranged from improved knowledge, skills or abilities that are aligned with student learning outcomes. See the [myCSUNtablet Assessment Video](#) for one biology faculty member's experience with assessment.

**Regularly Monitored Measures.** Over 15 metrics will be used to measure the initiative's progress and outcomes (see Question #12). Select metrics are shown below.

#### Near-Term

- Student and faculty satisfaction with the initiative
- Faculty who are using "active learning" techniques
- Total number of eTexts produced
- Number of CSUN apps produced
- Number of faculty in initiative
- Number of students in initiative
- Student enrollment in initiative
- Number of departments in initiative
- Number of mobile platforms supported for device neutrality

#### Long-Term

- DUF rates
- Average savings per student produced by eTexts
- Average savings per student produced by myCSUNtablet
- 1-year continuation rates
- 4-year graduation rates

**Question # 12 - Evaluation - Target Outcomes through 2018-19 (2 pages)**

Solid, steady growth is the goal of the initiative, which will be monitored using a portfolio of measures and target outcomes shown in Table 1 that span AY 2013-14 (the year the initiative began, or baseline) through 2018-19. Numbers are shown for all students because the initiative targets majors and classes, not different types of students.

Many metrics are shown below, in order to capture both processes and outcomes. We realize that not every metrics may materialize; however, even if we have achieved some of them, we will have made a big difference for a large institution with traditionally underserved students.

Sources of data include faculty and student surveys, metrics maintained by Information Technology, Institutional Research, and Academic Assessment and Program Review.

**Table 1  
Initiative Metrics and Targets**

<b>Metric</b>	<b>Baseline 13/14</b>	<b>Actual 14/15</b>	<b>Target 15/16</b>	<b>Target 16/17</b>	<b>Target 17/18</b>	<b>Target 18/19</b>
Student satisfaction with the initiative (overall)	45%	44%	50%	70%	80%	90%
Faculty satisfaction with the initiative (overall)	53%	55%	60%	65%	70%	80%
Number of faculty who are using “active learning” techniques	4	10	15	20	40	60
Total number of eTexts produced	30	70	100	130	160	190
Number of CSUN Apps produced	0	1	3	7	12	15
Average savings per student produced by eTexts	\$50	\$70	\$90	\$100	\$120	\$130
Average savings per student produced by myCSUNtablet	\$29	\$50	\$70	\$80	\$90	\$100
Number of faculty in initiative (who have ever taught a tablet class or plan to that year)	60	69	90	130	150	170
Number of students in initiative	1,223	2,500	3,000	4,000	5,000	10,000
Student enrollment in initiative	2,751	5,692	6,500	8,000	10,000	15,000
Number of departments in tablet initiative	6	8	10	12	14	16
Number of mobile platforms supported	1	1	2	3	All	All

Number of demonstrated cases of program-level student learning outcome attainment	5	10	30	60	90	120
Number of demonstrated cases of campus-level student learning outcome attainment	0	0	7	10	20	40
DUF rates	N/A	10%	9%	8%	7%	6%
1-year continuation rates	87%	88%	89%	90%	91%	92%
4-year graduation rates	11%	12%	14%	15%	16%	17%

**Appendices**

Appendix A: Letter from the Chief Executive Officer indicating support

Appendix B-1: myCSUNtablet iBook (PDF)

Appendix B-2: CSUN eText Bookshelf (PDF)

January 8, 2015

California Department of Finance  
Education Systems Unit -- Innovation Awards  
7th Floor  
915 L Street  
Sacramento, CA 95814

RE: Governor's Innovation Award

Dear Committee Members for California Innovation Awards,

I fully support the application called "myCSUNtablet: Mobilizing and Digitizing Learning for Tomorrow's Curriculum" being submitted by our campus. This project has moved our institution forward significantly, accelerating both the creation and delivery of digital teaching materials to help our increasingly mobile students learn. It is expanding both internally and beyond CSUN's walls, as surrounding institutions become interested in the potential of active learning techniques to enhance student success.

We are committed to supporting this project for years ahead and look forward to building partnerships with surrounding K-16 institutions, especially surrounding community colleges, to spread best practices and continuous innovation around technology-enhanced teaching and learning.

Sincerely,



Harry Hellenbrand  
Provost and Vice President for Academic Affairs



myCSUNtablet





## Introduction

In 2013, at the invitation of President Dianne F. Harrison, California State University, Northridge launched the myCSUNtablet initiative, a one-to-one tablet deployment with the goals of increasing student engagement, improving the quality of teaching materials, and decreasing cost. The first tablet classes were taught in Fall 2013. By Fall 2014, 69 instructors had taught 176 tablet classes in eight departments (biology, journalism, physical therapy, kinesiology, liberal studies, health sciences, psychology, and special education) and enrollment had reached a total of 5,692.

myCSUNtablet students engage with class material in real-time using an iPad.

**About this Book.** This multimedia book contains picture galleries and nine videos (excluding the intro media) which are presented using Bookry to save space. Please allow some time for the videos to load.

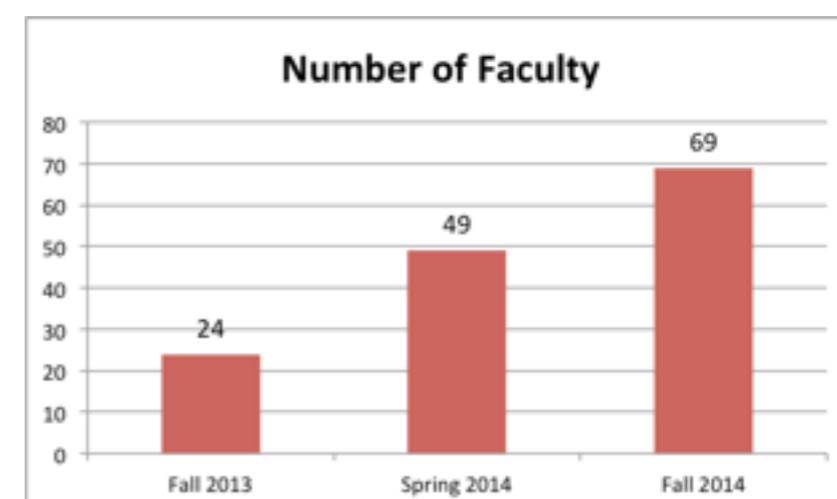
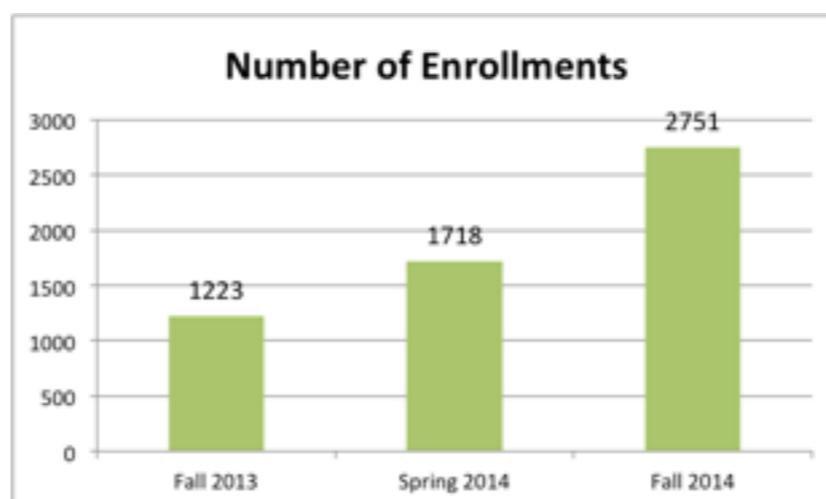
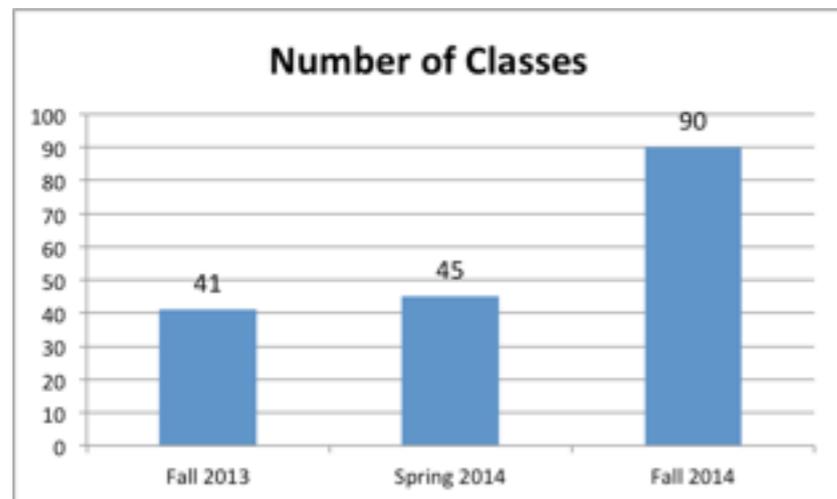


Faculty learn with course designers about innovative use of tablet technologies integrated with pedagogy, creative use of authoring tools, and accessible design. CSUN launched a parallel eText initiative to help faculty adopt, assemble, and create electronic materials. There are currently over 60 faculty-authored eTexts in production, many of which are free to students and used in tablet classes. Apps are also used extensively in teaching; these are selected for functionality, based on cost, and are tested for ADA accessibility.

**Uniqueness.** CSUN's tablet initiative is unique in a number of ways, most notably the intentional goals of increasing student engagement using a one-to-one tablet deployment and improved quality of teaching materials together with the goal to reduce costs for students. In addition, the myCSUNtablet initiative has cross-campus commitment of leaders, a deliberate focus on ADA accessibility, the inclusion of tablets for advising and athletes, significant expansion of related tablet professional development for faculty and the flourishing development of digital content for mobile delivery. These unique dimensions will be highlighted in various sections of the book.



Students say an iPad's portability makes it an essential part of their academic life both in and out of class.





iPads allow academic advisers to offer a more flexible and enriched advising experience when meeting with students.

**Student Experience.** Students chose to enroll in myCSUNtablet classes, which require the use of an iPad. Tablets are integrated into the curriculum and students use them in engaging ways to advance their knowledge, skills and abilities. Cost neutrality is reached as students use iPads in courses over several semesters and faculty replace traditional textbooks with lower cost e-books, apps and related e-learning materials. A multi-semester payment iPad plan option is available to students who purchase from the Matador Bookstore. Thanks to the generous donation from the Drown Foundation, free Apple Care has also been provided to students buying iPads in the bookstore.

**Advising.** Sixty advisors received iPads and professional development to learn how to provide students with a more mobile,



Student athletes can check out an iPad when they travel with the team to keep up with their studies.

seamless, and user-friendly advising experience. Advisors use iPads to help students adjust course schedules, make appointments, view degree progress reports, and change majors. iPads have been particularly useful in one-on-one sessions with incoming freshmen and transfer students.

**Athletics.** Thirty iPads were purchased for the campus Matador Achievement Center (MAC) and loaned to student athletes for use while traveling with their team. iPads are used to provide distance tutoring and mentoring to student athletes while they travel. The results are positive; student athletes report that they value iPad use and request them for checkout when traveling more often than laptops.

# Visionary Leadership

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## Individual Leadership

A credible and inspirational thought leader sets and articulates the vision.

## Shared Leadership

School leaders take collective ownership of the initiative.

## Community Engagement

Broad community sponsorship supports the institution's initiatives.



CSUN President Dianne F. Harrison sought to enhance teaching and learning with the myCSUNtablet initiative in the Spring of 2013.

## Individual Leadership

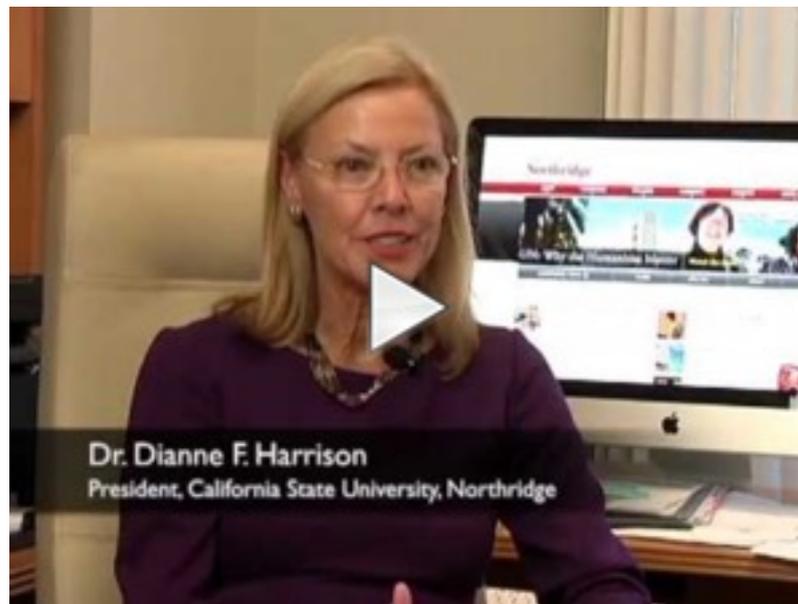
“If only I could have rotated those molecules, I would have loved science” is an oft-heard quote by CSUN President Dianne F. Harrison, who recognized early the potential for iPads to engage students and enrich teaching and learning. In November 2012 President Harrison invited members of her extended

cabinet, including vice presidents and college deans to join her in a visit to Apple’s headquarters in Cupertino to explore the potential of iPads in higher education. This visit initiated her invitation to professors at the Faculty Retreat in January 2013 to integrate tablets into teaching, and by Fall 2013 the “myCSUNtablet” initiative was launched.



Chancellor Timothy White visits a myCSUNtablet biology classroom in the Fall of 2013.

### myCSUNtablet 1.1 President Harrison's Views on Technology



The President's support of the initiative has continued to this day. President Harrison provided introductory remarks at the myCSUNtablet Faculty Kickoff meeting in April 2013. During a campus visit from Chancellor Timothy White, he visited a myCSUNtablet classroom with the President while instruction was taking place. Together with other members of the senior leadership team, the President has attended national higher education and technology conferences to present on the initiative's progress and to generate excitement around

the incorporation of tablets and other forms of technology into teaching and campus activities to enhance student success. Presentations attended include EDUCAUSE, Sloan-C, AASCU, and WICHE.

Early in the process, the President assigned co-sponsorship to the Provost, Harry Hellenbrand and Vice President for Information Technology, Hilary Baker. Together, they have provided strategic and tactical campus leadership for the myCSUNtablet initiative; the project is the

most significant CSUN academic technology initiative to successfully move so quickly from initiation to launch in a few months.

## Shared Leadership

Soon after the initiative was conceived, CSUN's vice presidents and other campus executives began planning. "It takes a village" was a phrase often used by leaders who realized that launching the initiative in six months required unprecedented levels of collaboration and coordination across campus divisions:

**Academic Affairs** provided resources (including iPads for faculty) and strategic guidance to initiate and sustain the initiative.

**Information Technology** enhanced the university's infrastructure to support tablets, which included adding more Wi-Fi to the classrooms, implementing an untethered infrastructure for iPad classroom teaching, adding iPad support for faculty, staff and students, including implementing methods for app deployment and coordinating communications using the [myCSUNtablet website](#).

The **Faculty Technology Center**, partnering with **Faculty Development**, identified core apps and developed ongoing professional development opportunities to help faculty learn how to use tablets and incorporate them into teaching.

**Administration and Finance** devised a multi-semester payment plan for students and an integrated payment process.

**Student Affairs** managed financial aid, linking to the iPad payment options. The student marketing team conducted focus groups with students and assisted with marketing and branding.



STOP badges, provided by the CSUN Police Department to help prevent theft, are available to students upon purchasing their iPads at the Matador Bookstore.



The **Department of Police Services** helped develop ways to keep tablets safe and secure.

The **Bookstore** developed a marketing campaign that included spirit wear and an effective sales strategy.

**Admissions and Records** devised ways to flag myCSUNtablet classes in the Schedule of Classes and notify registered students about the requirements.

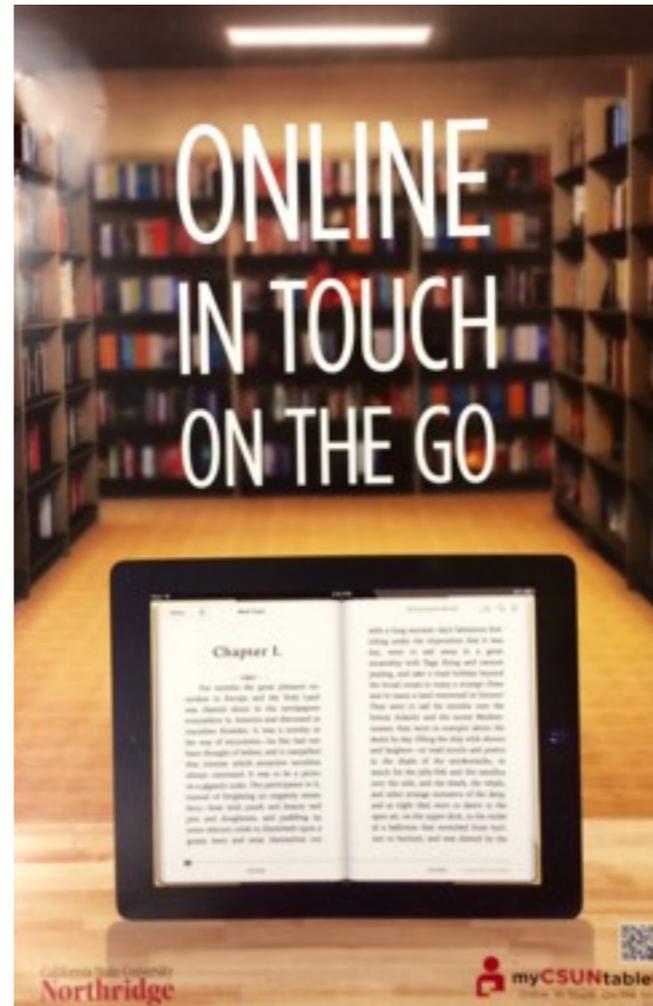
The **Library** provided iPad support to students in the newly-redesigned Learning Commons and loaned iPads to students.

**Universal Design**, the **National Center on Deafness**, and the **Disability Resources and Educational Services Center** helped develop a process for testing apps for ADA accessibility.

**Assessment and Program Review** helped devise ways to measure the impact of tablets on student learning.

## Community Engagement

**Campus Priorities.** CSUN has seven campus priorities, the first of which is an unrelenting focus on student success. Retention, persistence and graduation are ultimate goals, to be achieved through increased student engagement and more



A poster informing the CSUN community about myCSUNtablet could be found throughout the campus.

effective delivery of the curriculum.

Technology is a key strategy to achieve these targets and the myCSUNtablet initiative is a prime lever along with other initiatives such as lecture capture, hybrid, flipped, online programs, and learning analytics that are designed to enrich and personalize learning for student success.

### Campus Information Technology Vision.

The IT Vision@2015, a campus-wide information technology vision, was developed in 2010. One of the primary themes focused on enabling education and research through initiatives using technology effectively throughout the curriculum and the creation of digital books and beyond. The myCSUNtablet initiative directly relates to this theme. The vision is currently being “refreshed” to the IT Vision@2017 which continues to emphasize the need for eLearning and an “active learning” environment for student success.

**Foundation Board and Donor Involvement.** The myCSUNtablet initiative was presented to the CSUN Foundation Board, which includes CSUN alumni, as part of a showcase of exemplary university practices. Funding was generously received from the Joseph Drown Foundation; this funding was used to provide free Apple Care for students who purchased their iPads at the CSUN Matador Bookstore.

**Communications.** Since the initiative began, news of its progress has been proactively shared through multiple means. The myCSUNtablet website is continually evolving as a hub of innovative teaching practices and techniques tied to tablet use, and a poster displayed throughout campus that conveys the ability to read and study “online, in touch, on the go” through tablets.

Findings and developments from the initiative are presented several times per year -- both at department and college meetings and most prominently at a yearly showcase which celebrates teaching in a digital age and features faculty accomplishments at enriching teaching through technology with a focus on mobile learning, digital content and active pedagogy.

**Branding.** CSUN deliberately chose to brand the initiative to convey campus pride. Student focus groups were conducted which resulted in the myCSUNtablet brand; a logo was selected out of many options created by a student marketing group; and iPads were sold in the campus bookstore with accessories including a “hoodie” backpack and CSUN stylus.

## myCSUNtablet 1.2 Branding myCSUNtablet



When students purchased iPads from the campus bookstore they also received a backpack branded with myCSUNtablet.



**Staffing and Support.** The myCSUNtablet initiative received staffing support in the form of two new dedicated staff positions; a tablet technologist, and multimedia technologist, to complement the existing team of instructional designers, faculty fellows, faculty liaisons, and student liaisons. This extended team, a partnership

between Academic Technology’s Faculty Technology Center and Faculty Development, helps faculty find creative and effective uses of tablets, develop digital content, and design tablet courses. Three faculty fellows promote tablet use and facilitate the creation of digital content. Faculty tablet liaisons are identified for each



of the disciplines teaching within myCSUNtablet (one per department); they serve as internal department liaisons and “change agents” to support the faculty who are tablet teaching and to ensure app ADA accessibility. In 2014, Information Technology worked with

myCSUNtablet faculty to identify a team of 50 student technology liaisons who are students enrolled in tablet classes to serve as “eyes and ears” for IT to identify and resolve technology issues quickly, and participate in focus groups to share insights with the tablet team.

CSUN President Dianne F. Harrison’s vision encourages faculty to integrate technology into their teaching. These faculty receive awards after attending an institute and presenting their innovations in a faculty showcase.

# Innovative Learning and Teaching

## Student Learning

Learning is a personal experience for every student.

## Instructional Practices

Faculty are master learners who expertly guide their students through difficult and complex tasks.

## Curriculum Design

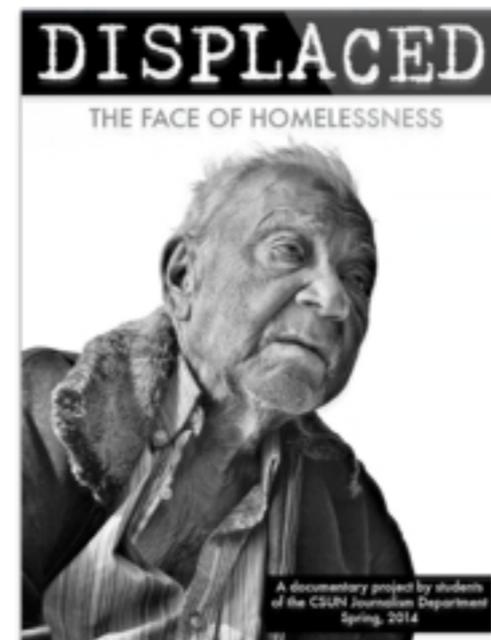
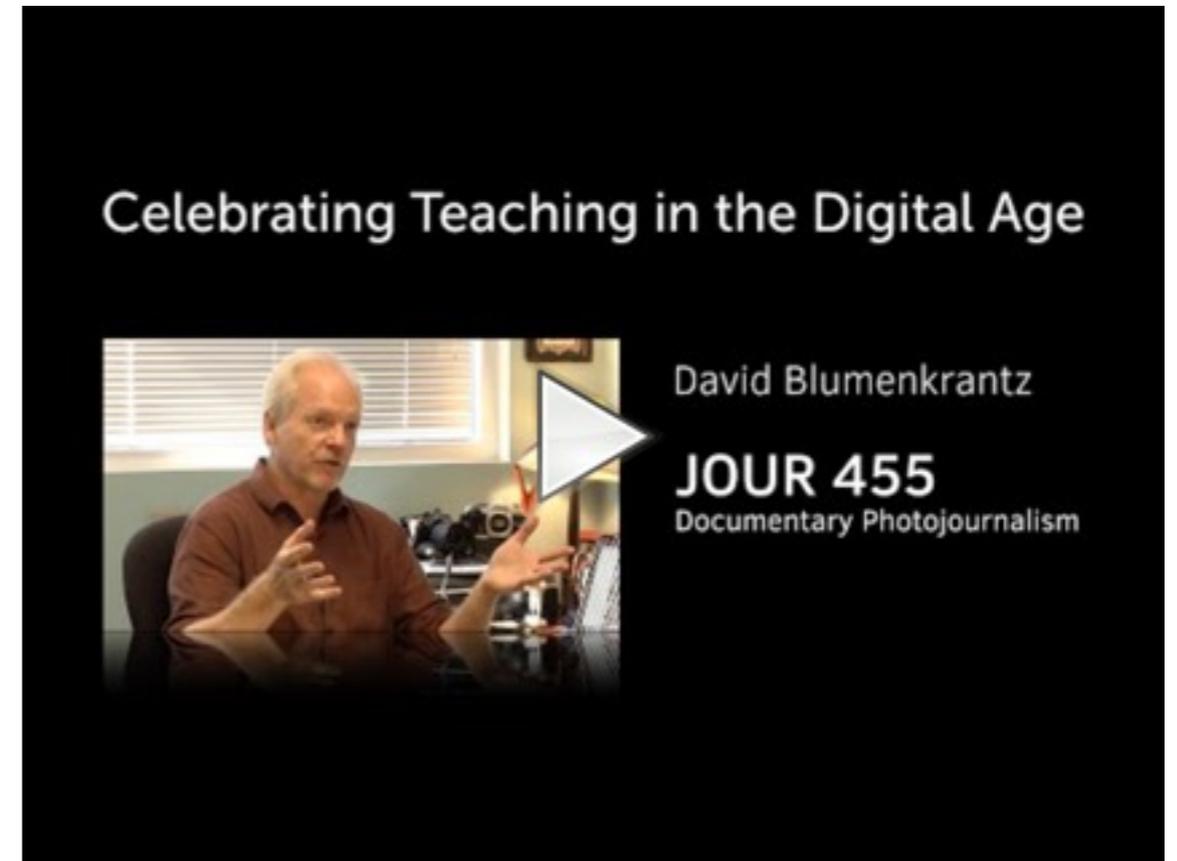
Innovative and rigorous curriculum is designed to leverage technology.

## Student Learning

Tablets enable students to learn more seamlessly, tap into higher order thinking skills, and blend art and intellect through the incorporation of multimedia into daily exercises and assignments. Students at CSUN use tablets not just to access existing information but to create, synthesize, deliver, and evaluate information in a way that makes learning personal and memorable. Students create content in apps such as iPhoto, iMovie, Pages and Keynote, and publish not only to their instructors and classmates but to the public at large using platforms such as iBooks and Storehouse. Below are some examples.

**Journalism.** In David Blumenkrantz's documentary photojournalism class, students tackled the difficult subject of documenting homelessness. Throughout the semester, they captured images and multimedia and then edited the content using iPads. The culminating experience had the

## myCSUNtablet 1.3 Documentary Photojournalism



students collaborate on the creation of a book as the final class product that is available in the [iBooks Store](#). The project achieved a program learning outcome which seeks to have students apply tools and technologies appropriate for the news media professions in which they work to communicate for and with diverse publics.

## myCSUNtablet 1.4 Student Learning



Kinesiology students use the iPad for motion analysis and to measure joint angles in athletic training.



## myCSUNtablet 1.5 Student Voice



The iPad gave Melissa Lalum's journalism students the flexibility to complete a variety of assignments and to personalize their learning experience. Students in the news practicum were no longer bound to only write stories or shoot photos. With the iPad, they used video, audio or social media in their storytelling in order to expand their skills and become more workforce ready upon graduation.

**Health Sciences.** Carla Valdez's public health students bring their communities to life by using the iPad to capture photos and videos of their neighborhoods and then publish them in the public-facing Storehouse app. Before joining the myCSUNtablet initiative, the students discussed the determinants of health in their communities like access to parks, air quality and food options. The versatility of the iPad allows them to investigate, document and better analyze the health and social practices of their neighborhoods and collaborate on the findings with other students to spark discussion and change.

**Kinesiology.** In Melissa Montgomery's athletic training classes, students observe normal and abnormal movement patterns. In the past, they used their eyes to make qualitative observations and subjective judgments. Now they can record movements on the iPad with video and, using an app called Ubersense, they are able to conduct motion analysis and measure joint angles. This results in quantitative observation and the ability to make objective judgments. In turn, the accuracy enhances the students ability to improve their subjective judgments by more accurately training their eye.

**Biology.** Students in Mary-Pat Stein's genetics class use iPads as a research tool, with each student investigating a gene associated with diabetes. They are mining databases, recording information using journaling apps, analyzing their findings and sharing the results with their peers and professor in and out of class.

## Core Apps

Faculty are encouraged to adopt the following Core productivity apps for students to have a common experience as they go from course to course; doing so will prevent them from needing to learn or purchase multiple apps for activities such as note-taking, PDF-viewing and annotating. These apps can be used in and out of the classroom, are free or available at a low cost and mostly accessible.

This list was compiled after testing by CSUN staff from Disability Resources and Educational Services (DRES), National Center on Deafness (NCOO), Universal Design Center (UDC) and the Faculty Technology Center (FTC).

 Pages	 Keynote
 Numbers	 Socrative
 Adobe Reader	 Explain Everything
 Documents 2 Free	 Blackboard Collaborate
 Evernote	 Flipboard
 Calculator Pro Free	 Dragon Dictation
 Box	 Citrix Receiver*

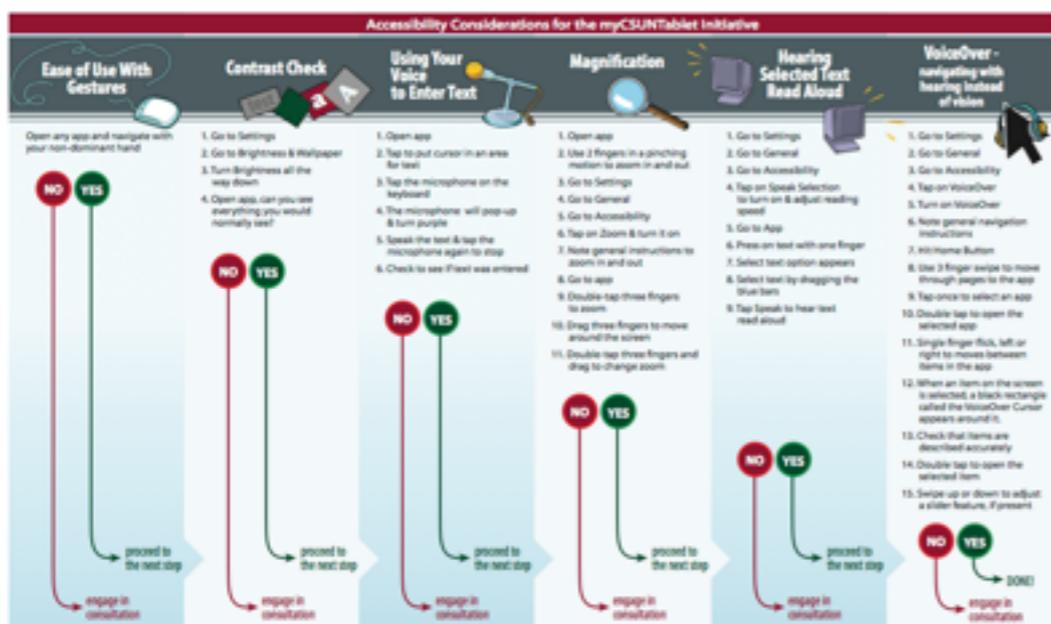
A variety of apps were recommended at the launch of the myCSUNtablet program to support productivity.

## Apps

Apps are a central feature that differentiate iPads from other devices or laptops. Students use apps to engage with rich multimedia content, to create their own student-generated content, and to increase their general productivity. A set of 14 core apps was recommended to faculty at the outset of the initiative for three reasons: (1) provide a “starter kit” that was tested for ADA accessibility; (2) encourage faculty to standardize on a core set of productivity apps for consistency; (3) encourage the use of free or low-cost apps in order to help reduce costs. As faculty become more familiar with the iPad ecosystem, however, their exploration increases and they remain on the lookout for new apps that can enrich the learning process.

## ADA Accessibility

ADA accessibility is a core value at CSUN and taken very seriously. Therefore, each app had to be tested for accessibility. A faculty “app liaison” for each major was identified to serve as point person to make sure that this happened. A simple 6-step process was developed jointly with CSUN’s Centers for Universal Design and Disability Resources toward the goal of making apps easy for faculty to test. When an app is found to not be fully accessible, an equally effective alternative access plan must be identified.



A six-step flow chart was developed to test apps for ADA accessibility.



Professors are no longer tied to at the podium, but can move freely around the classroom and interact with students when teaching with an iPad.

### **Instructional Practices**

For students to learn differently, instructors have to teach differently. At CSUN iPads are being used in diverse ways to enhance instructional delivery and activate learning. The following section profiles specific ways that instructional practices have changed with the introduction of tablets.

**Untethered Teaching.** Now able to teach untethered, faculty no longer stand in front of the classroom reciting information. Rather, they are free to move about the room, mingle with students and assist as necessary, even in large classes, while students work through problems both individually and as teams.

## myCSUNtablet 1.7 Collaborative Classroom



## myCSUNtablet 1.6 iPad Activities



Students can annotate class notes during a lecture or after class.



**Drawing.** Faculty pause periodically throughout lecture to ask students to demonstrate their understanding often, in the case of biology faculty, by drawing a process (e.g., mitosis) or conceptual framework (e.g., phylogenetic trees) and submitting it to the Learning Management System to heighten a sense of accountability.

**Annotating.** Faculty distribute skeletons of lectures to students before class so they can use annotation apps such as Explain Everything to mark up content as it is delivered.

**Quizzing.** In many classes a quiz is given at the start of class to gauge student comprehension of material assigned previously; results are uploaded into the Learning Management System for instantaneous grading or spot checking.

**Polling and Feedback.** Instructors use apps such as Socrative, Learning Catalytics, TopHat, Nearpod, Poll Everywhere, Talkboard, and Padlet to assess student

comprehension in real-time. These apps also allow for anonymous responses, which offer students a safe way to share their knowledge and give the instructor a more accurate view of what they are learning. If the results are poor the instructor will go back and cover the material again, resulting in more students than ever before comprehending the material before they leave the class.

**Lecture Capture.** Faculty capture lectures using iPads and distribute them digitally to students so that students can “rewind the instructor” and get a second, third or fourth chance to comprehend complicated material.

**eTexts.** Faculty create and distribute their own electronic materials such as lab manuals, digital textbooks or other content created as part of the eText initiative, which supports myCSUNtablet through the production of digital content.



Physical therapy students use the iBooks textbook created by their professor both in and out of class.

Using tablets gives faculty in various disciplines the flexibility to implement a variety of instructional practices when engaging students.

**Special Education.** Sally Spencer models the use of apps such as Nearpod and Explain Everything with her special education students, who in turn can apply what they have learned when in their own student-teaching settings. In addition, iPads are used to record classroom activity for later review by the student teachers — giving tomorrow's teachers insight into how to employ evidence-based learning.

**Biology.** Jeanne Robertson ventures out of the classroom and takes her biology class to the botanic gardens to learn about plant taxonomy. The students explore the CSUN Botanic Garden and take pictures of



plants using their iPads. They then open the images in the Explain Everything app and label the parts to help them learn terms associated with plant structures.

**Physical Therapy.** Aimie Kachingwee's iBooks textbook has had a significant impact on her physical therapy classes. The book, and its use in eLabs in and out of class, caters to all types of learners: visual, auditory and readers. In the past, students could only observe a demonstration one time and they had to rely on their book repeatedly and at their leisure to review and better absorb the material. In addition, they use tablets to capture videos in order to do postural and movement assessments.

Biology students use their iPads to take photos in CSUN's Botanic Garden for a class assignment about plant taxonomy.



Discussion and collaborative work is a key component in tablet classrooms.

### **Curriculum Design**

Teaching with tablets requires redesigning the curriculum to take advantage of the added functionality and flexibility that tablets provide. Four key ways the curriculum was redesigned include (1) creation of the “active classroom”; (2) faculty creation of digital content for delivery on tablet devices; (3) grading on iPads; (4) examinations on iPads.

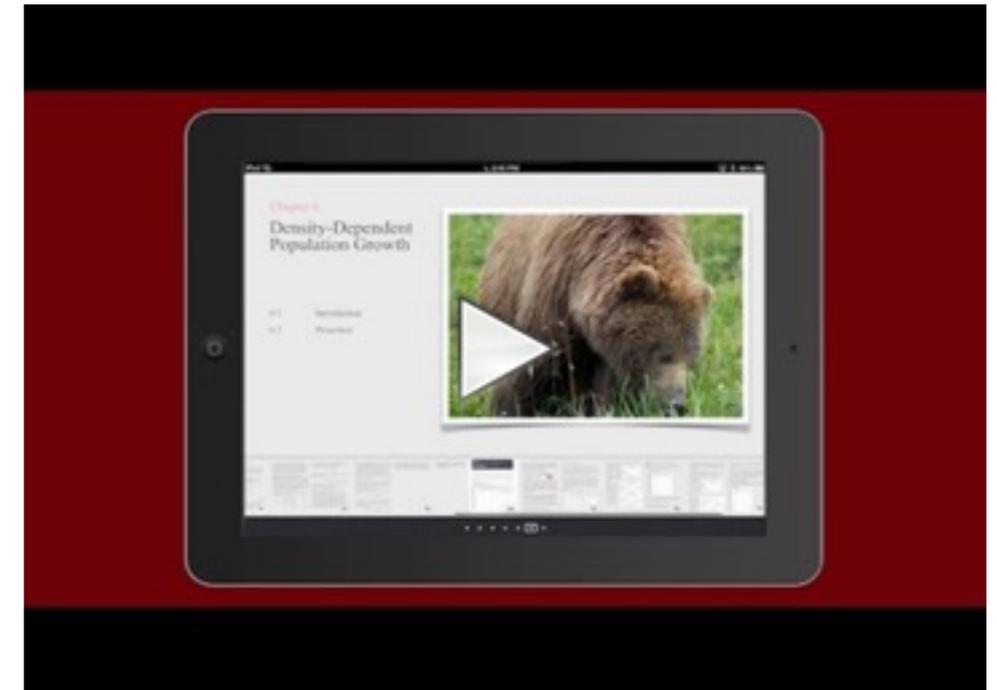
**Active Learning Classroom/Tablet Pedagogy.** While they may have started “small” by using the tablet for single functions such as quizzing or lecture delivery,

faculty soon realized that fully mining the potential of tablets required redesigning their courses to incorporate “tablet pedagogy”. In many cases this redesign supported the development of the active or “flipped” classroom because it meant that in-class time was used for iPad-enabled discussion or collaboration. Some faculty now deliver their entire curriculum with tablets and use any multiple aspects that the technology offers (e.g., recording lectures, teaching untethered, quizzing, multimedia, etc.).



A faculty member reviews an eText with a student. Nearly 70 CSUN faculty have authored or are creating their own eTexts.

## myCSUNtablet 1.8 eText Overview

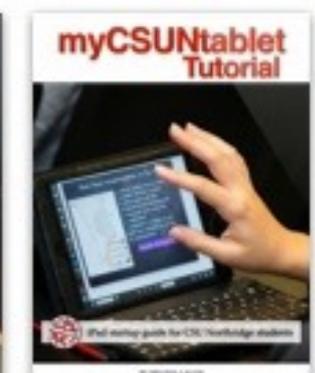
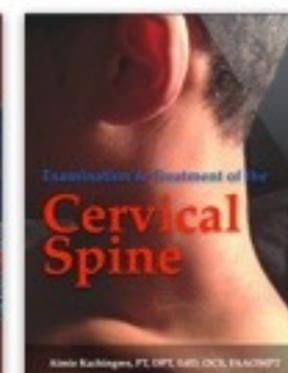
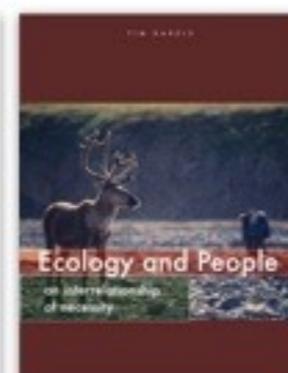
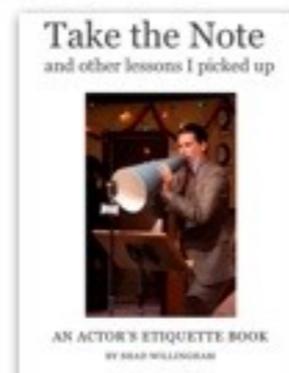
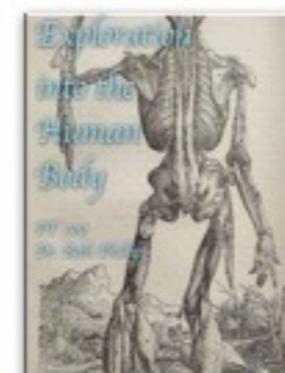
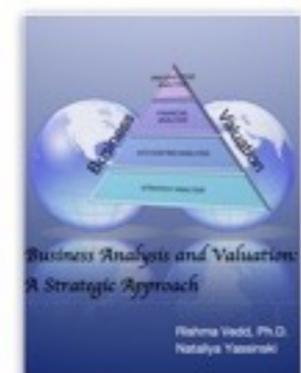
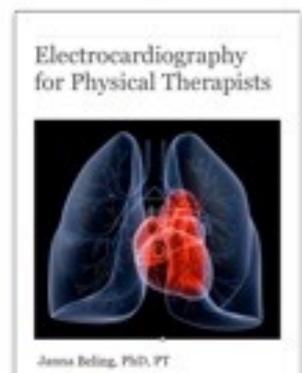
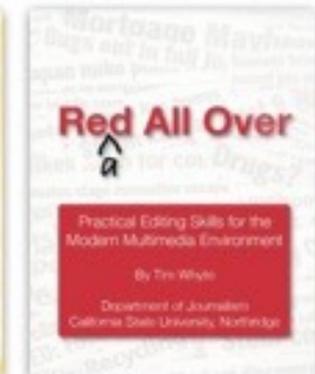
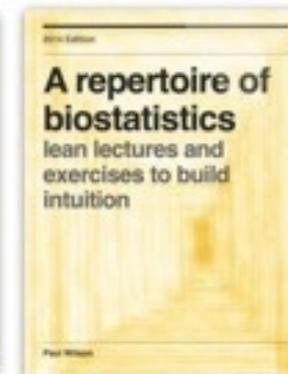
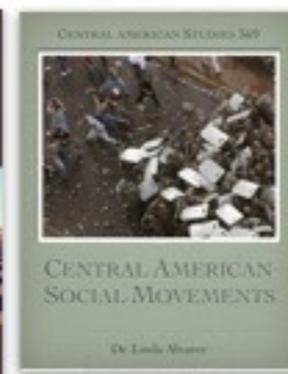
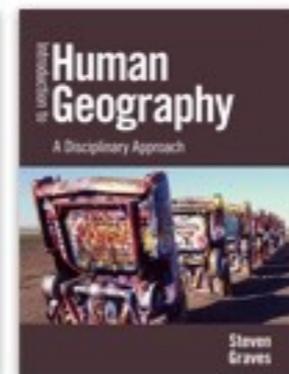
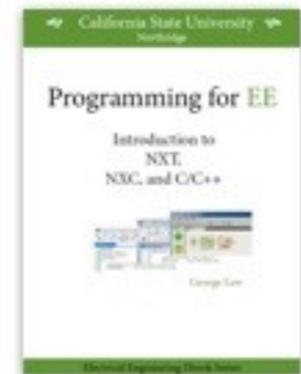
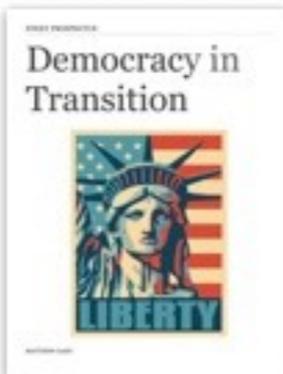
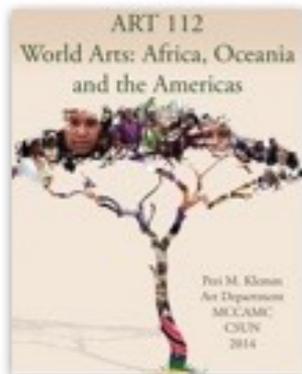
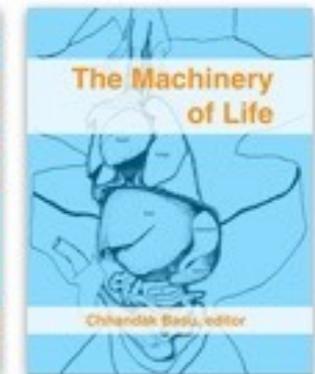
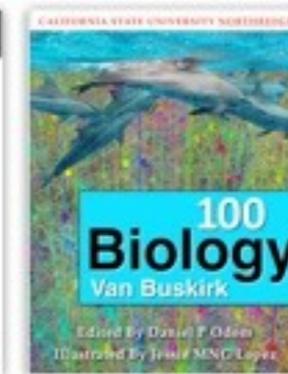
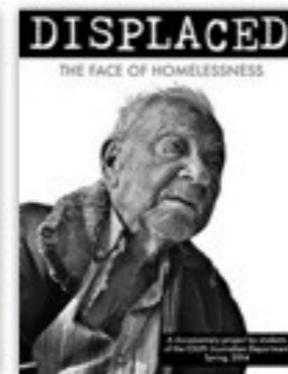
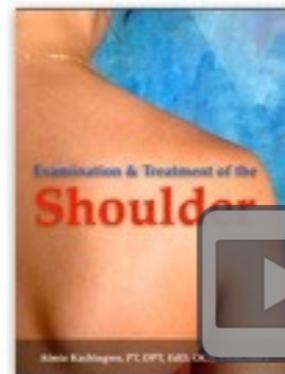
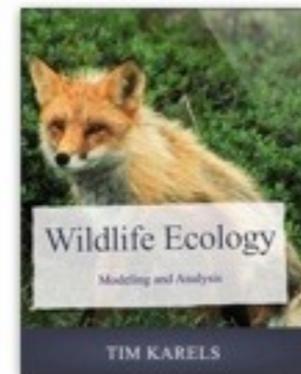
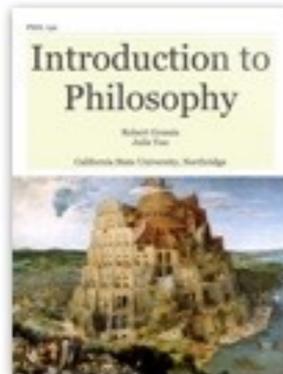
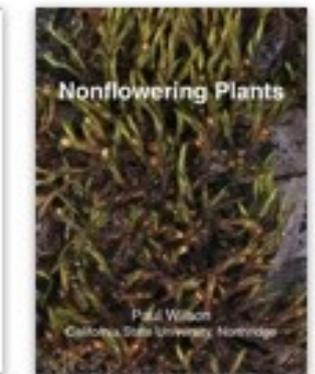
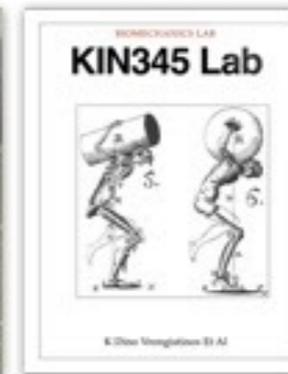
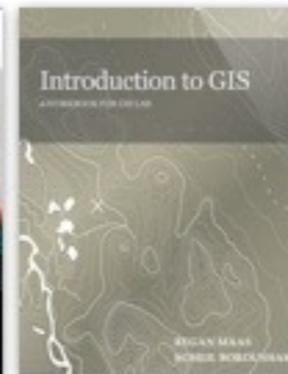
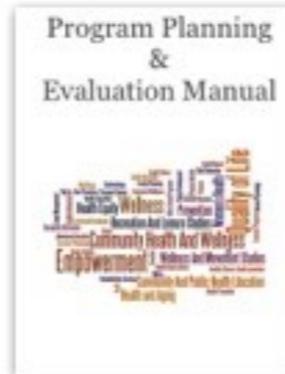
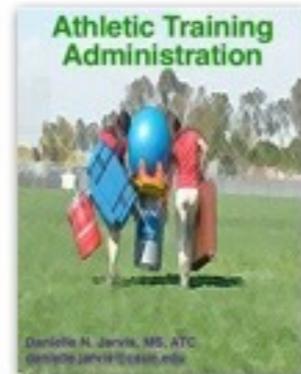


### **Creation of Faculty-Authored Digital Content.**

A central element of the myCSUNtablet initiative was the eText initiative, the goal of which was to incent and support faculty as they created high-quality, low-cost digital content for tablet delivery. Nearly 70 faculty are creating eTexts from disciplines ranging from chemistry to art. Many of these are iBooks textbooks, rich with audio, video, captured lectures, interactivity and knowledge checks, delivered either as a born digital work or as a PDF (for those courses not yet in the initiative). eTexts include core material for the course, lab manuals, and other supplementary materials.

# Faculty Authored eTexts

Tap on  
any  
cover



myCSUNtablet 1.9 Geography eText



myCSUNtablet 1.10 Journalism eText



eLearning materials allow students to study for any class while on the go.

Early findings suggest that the creation of eTexts are a “win-win-win” benefiting faculty, students and the public. Faculty feel pride and gratification from creating content that capitalizes on their expertise; students benefit by receiving content that is high quality, tailored to their courses and

free or low-cost; and the community benefits by gaining access to faculty-produced content through channels such as the campus library and iBooks Store. In Fall 2014 the first two faculty-authored iBooks (*Northridge Natural History* and *Displaced*) were published in the iBooks Store.



Faculty learn a variety of techniques about grading with an iPad during the summer myCSUNtablet Academy.

**Grading on Tablets.** Growing numbers of faculty are finding they can grade papers and other assignments on tablets using styli for analogue, tactile mark-up. Grading can be done anywhere as assignments are stored in the cloud, exciting faculty who enjoy not having to cart stacks of

essays around. Graded assignments can integrate with the Learning Management System, even incorporating voice commentary on assignments to personalize the learning experience.



Biology students take an exam using their iPads. Low stakes or practice quizzes are administered from the start of the semester so the students are comfortable with the testing process before a major exam.

**Exams on Tablets.** Some myCSUNtablet classes are experimenting with delivering exams on iPads, which helps reduce paper, streamlines the test-taking process, and enables faster delivery of student grades. Two solutions have been tested and to date no perfect, cost-effective solution has been found (e.g., solutions

are either too costly, not stable or secure enough, or don't enable drawing). However, it is anticipated that these obstacles will ultimately be resolved and that when they do, taking exams on tablets will become the preferred method for exam delivery.

# Ongoing Professional Learning

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## Relevant and Timely Professional Development

Faculty engage in a cycle of inquiry that promotes reflection, experimentation, and sharing.

## Relevant and Timely Professional Development

Ultimately, the success of any tablet program depends on the degree to which faculty utilize tablets in the classroom. This in turn depends on faculty levels of skill and enthusiasm -- without which, iPads can turn into expensive paperweights. Integrating tablets also means changing the way faculty teach. For these reasons, CSUN designed a robust and comprehensive program of professional development that includes ample opportunities for skills training, experimentation, learning from peers, and access to an on-demand support network. This multi-track strategy consisted of the following elements:

**Workshops.** An array of training opportunities are offered to faculty throughout the semester, ranging from iPad basics and creating and delivering presentations to a newly added session on transforming the classroom into an active learning environment using tablets.



## Fall 2014 Workshops

**iPad Essentials and Beyond.** For the new and experienced iPad user, this workshop covers how to set up and navigate your iPad, manage files, store data, find apps and content, ADA accessibility settings, and general productivity.

**Presenting with Tablets.** Learn how to present material for your class using a tablet computer. This session will cover how to create original presentations on an iPad or adapt existing content. The hands-on session gives participants the chance to connect to a projector and present a variety of interactive material. Faculty are encouraged to bring your own devices (tablet and laptop) and a presentation you want to adapt.



Faculty experiment with their iPads during the myCSUNtablet Academy and discover just how much fun a student can have when learning with an iPad.

**Tablet Academy.** In June 2014 CSUN offered its first [myCSUNtablet Academy](#), a three-day learning experience designed to provide faculty who are new to teaching with tablets the core training necessary to facilitate a tablet course. Upon completing

the Academy, faculty are able to design a tablet course, present real-time in class using a tablet, build instructional materials geared for tablet delivery, create collaborative in-class tablet activities, and assess students using assignments and activities.



Each myCSUNtablet department has a faculty liaison who is the go-to person regarding the program. They share their knowledge on panel discussions and lead learning communities with their colleagues.

**Faculty Liaisons.** myCSUNtablet faculty liaisons are appointed in each department to serve as internal catalysts and point persons to help their peers with “all things tablet”. They convene internal learning communities and make sure apps are tested for ADA accessibility. They also coordinate a peer visit program whereby faculty visit each other’s classes to observe what a tablet class looks like in actuality.

**Learning Communities.** Each department’s faculty liaison coordinates a learning community within their department to share best practices, vet new apps and offer support with assessment. These communities allow faculty to coordinate peer visits so colleagues can observe one another teaching. In addition, larger cross-departmental sessions, or “open mics,” are held during the semester to bring all myCSUNtablet faculty together to share exercises and teaching strategies with tablets.

**One-on-One Support.** The Faculty Technology Center offers personalized support for technology issues and course redesign. Faculty are able to receive walk-in or phone support, or make an appointment for a consultation with an instructional designer or technologist.

**Online Support.** Early in the program a myCSUNtablet site was set up inside the campus Learning Management System. Information on all aspects of the program was posted, in addition to the provision of private forums in which faculty could post thoughts, suggestions, and tips about tablet use.

Faculty collaborate and share best practices about teaching and learning with tablets during workshops and in one-on-one meetings.



# Evidence of Success

## Quantitative

Data is routinely collected and analyzed to inform progress and success.

## Qualitative

Narrative, reflective, or anecdotal evidence is collected and shared.

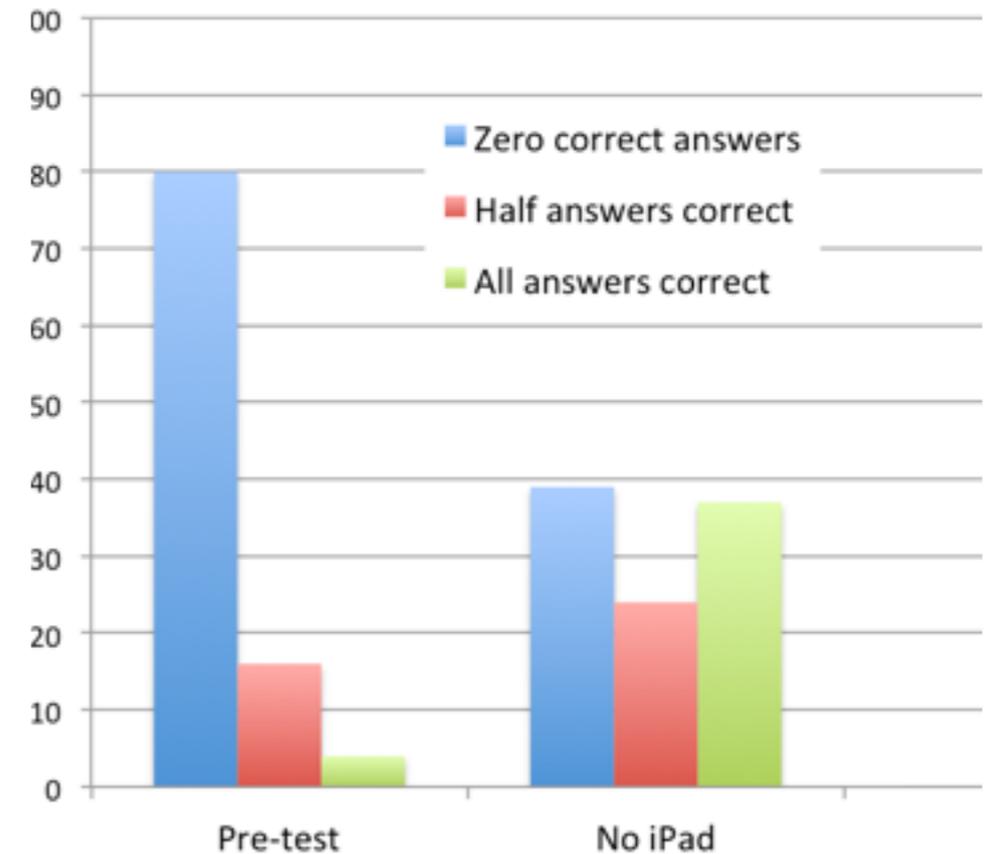
“Do they make a difference?” is the key question often asked regarding whether tablets have an impact on teaching and learning, in addition to whether the initiative is meeting its goals. Two forms of assessment are conducted -- **direct** assessment to gather evidence of impact on student learning outcomes, and **indirect** assessment to gather impact on attitudes and behaviors. Both quantitative and qualitative techniques are employed to gather evidence.

## Quantitative

**Student Learning Outcomes.** To address whether iPads have an impact on student learning outcomes, a straightforward “micro-assessment” technique was developed whereby faculty would teach a similar lesson two different ways -- once with an iPad, once without, and then measure the results of each. Since the instructor and students would stay the same, this would increase the likelihood that any changes observed would be due to the iPad use itself. Faculty were also encouraged to make sure that the activity was aligned with learning outcomes at either the program, course, or activity level. When an in-class comparison was not possible, faculty could compare outcomes between

## myCSUNtablet 1.11 Assessment Results

### Introductory Biology Micro-Assessment Fall



iPad-based teaching can result in more students getting right answers, as shown by this comparison of iPad to non-iPad teaching methods.





The iPad offers students in larger classes a more personal learning experience since the professor can interact and move around the classroom.

courses they had taught before, and the same course they now teach with an iPad.

Early findings suggest that when carefully aligned with pedagogy, iPad use can increase student performance when compared with the same activities conducted without an iPad. The improvements can be attributed to increased engagement (e.g., ability to draw processes, rather than just listen to them), students' ability to indicate to the professor when they don't understand, and increased student accountability from having to take

screenshots of work performed and submit while still in class to the instructor. Evidence of increased student performance was also apparent not only in knowledge, but also in students' skills and abilities (e.g., how to measure ankle rotation in physical therapy or increase production of high-quality multimedia products in journalism).

**Student Attitudes and Behaviors.** Student attitudes and behaviors around iPad use were gathered by administering a survey to all students taking an iPad class in Fall 2013. The response rate was 25%.

## Student Attitudes

Students were asked for their overall attitudes toward iPads. Below are percentages of students who either agreed or were neutral about the following statements:

- My instructor relied enough on the iPad in teaching the course to make it worthwhile - **75%**
- The cost of required apps was reasonable - **75%**
- I am happy with the way iPads were used in this course - **61%**
- I think iPads should be adopted in teaching more broadly at CSUN - **60%**
- Using the iPad will help me save money in the long run - **51%**

Students were asked about specific benefits of iPad use. Below are percentages of students who either

Students reported using their iPads in many ways, most frequently to access the internet (94%), take a quiz (92%), visit a course in Moodle (90%), use apps (84%), process email (76%), take pictures (76%), take notes (75%), take an exam (75%), annotate slides (68%), read an eText (66%), watch a video (62%) and draw pictures (60%).

## Student Attitudes

The following are select quotes from students indicating both positive and negative aspects of iPad use:

### Positive aspects

- “Instead of trying to hurry and copy down notes, we could make notes on the PowerPoint we downloaded. That way you get more out of your lectures!”
- “The in-class iPad assignments made sure you were paying attention.”
- “I loved how it saved paper and space. All the information for my course was saved in one little iPad.”
- “I was able to actively draw things in class which helped with my understanding of the material.”



Students' views about the iPad are varied. Positive aspects included annotating slides in class and saving paper. Students found the major deterrent to be the cost of the device.

## myCSUNtablet 1.12 Student Voice



Interestingly but perhaps not surprisingly, satisfaction with iPad use varied widely, and was directly correlated with levels of faculty skills and attitudes.

### Qualitative

Qualitative data was also gathered through student surveys, focus groups, and an in-depth ethnography looking at the shift in classroom culture.

**Student Attitudes and Behaviors.** Data was gathered both via a student survey and focus groups. Students said the best part of using iPads was annotating slides, reading eTexts, saving paper, viewing professors' notes, watching video, taking pictures, learning with apps, interacting in class, taking exams, getting organized, and having less to carry. They shared that the worst aspects of using iPads included the cost to obtain the device,

the requirement to buy a certain configuration, redundancy with existing laptop, inability to use other tablets, connectivity and technical issues, and the fact that professors are still learning.

**Faculty Attitudes and Behaviors.** Faculty were also surveyed about their tablet use and perceptions. Survey responses indicate that faculty believe iPads have great potential to enhance learning but that adopting them fully requires pedagogy redesign. Their biggest uses of iPads included distributing content, checking for student understanding, drawing in class, taking photos, and having students create video assignments. Perceived benefits of tablet use included increased student engagement, student collaboration, helping students save money over time, getting students more excited about class, and deepening understanding.

**Ethnography.** In Spring 2014 an ethnographic study was conducted to investigate how iPad use changes classroom culture and activities. Specially trained graduate students from the anthropology department visited tablet courses and then interviewed instructors about their classes.

Results suggested that iPads in the CSUN classroom hold both benefits and challenges for students and faculty. The study concluded that iPads can enable classrooms to become more flexible, help teachers and students work together on problems and complex processes in class, hold students more accountable for their own learning, and encourage students to participate more actively in class. The devices can give teachers and students a more efficient means of organizing information, foster student engagement, and provide cost-savings to students who no longer need to purchase expensive printed materials. Finally, using iPads



**Faculty have discovered the potential to engage students as one of the iPad's biggest benefits.**

can prepare students for working with digital media in future careers.

The results also noted that iPad use poses challenges to students and faculty as well. iPads may involve a steep learning curve and demand significantly more faculty time and effort than expected for conventionally taught courses. iPad-related technology problems such as intermittent Wi-Fi access, tethering issues, students writing without keyboards, and inconsistency in student iPad versions can constrain learning and teaching effectiveness. Students can have varying technological readiness, leading to differing capacities to use iPads effectively in class. iPad-based exams can also cause anxiety during test-taking. Finally, requiring iPads raises additional questions of tablet standardization and cost.

# Flexible Learning Environment

## School Design and Facilities

Facilities and schedules are designed to maximize learning opportunities that technology provides.

## Information Technology (IT)

IT infrastructure supports innovation in teaching and learning.



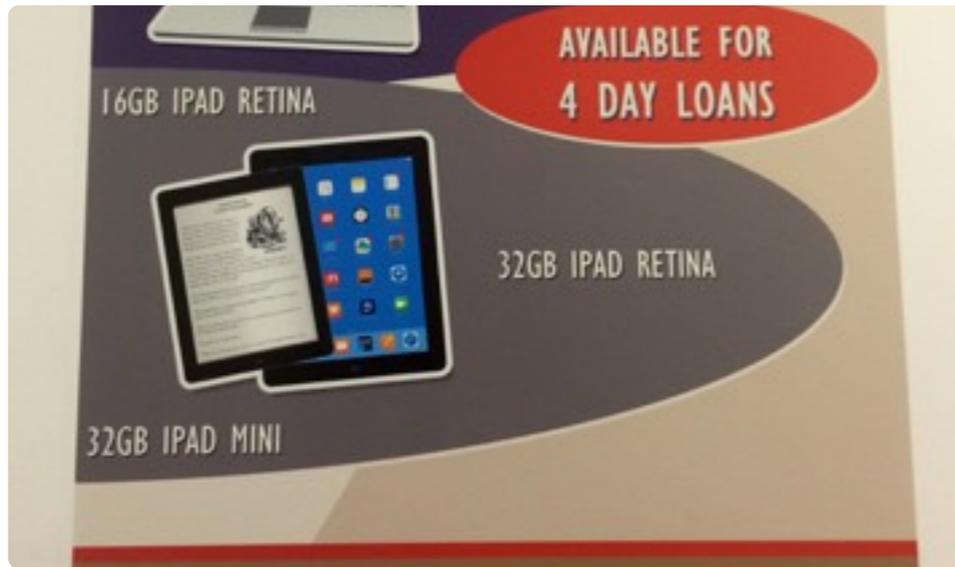
The Help Center in the library's new Learning Commons is a central, convenient location for students.

## School Design and Facilities

Tablet use is supported throughout campus to enable mobile learning anywhere.

**Library.** CSUN's Oviatt Library recently renovated the first floor from a traditional stack environment to a dynamic Learning Commons which included an IT Help Center prominently located on the first floor to provide technical support to students. The library

### myCSUNtablet 1.13 Oviatt Library



The library has a variety of devices available for checkout by students.



### myCSUNtablet 1.14 Untethered Teaching



also created a Creative Media Studio, or “Makerspace” for students where they can access not just tablets but other desktop computers for the creation of digital content for use in class assignments in beyond. Finally, students are also able to obtain a loaner iPad from the library for emergency or temporary use.

**Untethered Teaching.** The ability for faculty to free themselves from the podium and lecture while pacing at the front of class is appealing to many faculty, yet presented challenges to the IT infrastructure. To enable untethered teaching, CSUN chose a solution that combined hardware (ClearPass) and software (Aruba AirGroup and AirServer). This strategy enabled untethered teaching while preventing excess load (“chatter”) on the network, which would otherwise compromise network performance. Faculty preparation and training was also important to raise awareness of the ability to “hijack” a neighboring

faculty member’s classroom screen, and how to avoid this from happening.

**iTunes U.** iTunes U is being investigated as an avenue to deliver iBooks textbooks to students for use on their iPads. While it has not been advocated on broad basis because of perceived overlap with the campus Learning Management System, it will become an important tool to deliver updatable iBooks textbooks in a seamless manner.

### Information Technology (IT)

The adoption of tablets presented a number of infrastructure challenges, by far the largest of which was ensuring enough wireless network capacity.

**Wi-Fi.** The CSUN campus first initiated wireless networks in 2001. In addition to extensive Wi-Fi deployment in all classrooms and labs, CSUN’s student campus quality fee has also funded wireless network deployment in many non-classroom settings such a outdoor spaces, hallways outside



classrooms, and food courts. IT has increased the wireless capacity within classrooms; however, the concurrent usage associated with myCSUNtablet classes continues to push the need for even greater Wi-Fi capacity.

Imagine 500-plus students across multiple classes taking a quiz or accessing video files simultaneously over the Wi-Fi network with their tablet devices. This situation is real at CSUN when multiple tablet classes of up to 150 students meet in a flipped class, and faculty administer a quiz in the first few minutes to check students' comprehension of the material that was studied prior to class. This synchronous wireless connectivity puts unprecedented strain on the campus wireless network environment.

A number of steps have been taken to address the wireless infrastructure needed for

**Student feedback on learning with iPads is being sought through focus groups in Fall 2014.**

myCSUNtablet classes, including adding more wireless access points and other network changes. In addition, monitoring and balancing/tuning the wireless environment is an ongoing process.

### **Student Tablet Liaison Program.**

To help smooth the integration of the technology changes, CSUN created a program whereby 50 students already enrolled in tablet classes were hired as student tablet liaisons. Their job is to report, after each class, whether or not technology issues had arisen so that they could be triaged and resolved quickly. In addition to documenting issues, student participate in focus groups which provides valuable opportunities to hear insights from students about their learning experiences in tablet classrooms.

# Year One Assessment and Next Steps

## Conclusions and Next Steps

Integrating tablets into teaching and learning at CSUN in the first year of the myCSUNtablet initiative has been an exciting and gratifying experience, albeit challenging. The following conclusions and next steps can be drawn.



iPads can have a prominent impact on students when used for active learning during class time.

**Tablets are a tool, not a panacea.** Early assessment results suggest that iPads have the potential to increase student comprehension and performance when used in ways that promote engagement, active learning and accountability, and when professors obtain feedback that allows them to tailor their instructional strategies accordingly. However, tablet use has to be thoughtfully designed, deployed, and supported for such learning outcomes to occur. Assessment

will continue and concerted efforts made to fully integrate into the teaching and learning process to “close the loop”.

**Integrating tablets into teaching requires considerable faculty time and investment to do effectively.** Learning to use the iPad effectively requires adopting them in holistic ways -- which includes finding the best apps, learning how to manage files in the cloud, integrating assignments

with the Learning Management System, and learning how to use the iPad as a tool for active learning. Upon realizing the magnitude of the learning curve, faculty request time to redesign their courses to fully embrace “tablet pedagogy”. Professional development should continue to make sure that faculty have the support they need redesign their courses and adopt materials appropriately.

**eTexts are the fastest route to cost neutrality, benefit faculty, students and the public, but require time to create.**

The fastest route to recovering the cost of iPads is through the adoption of free or low-cost eTexts. While many publishers now provide digital versions of textbooks, they are not always optimized for tablets or are still high in price. Alternative strategies are for faculty to assemble free or low-cost teaching materials from open education resources, or to create digital texts and teaching materials themselves. The eText program, which encourages faculty-authored eTexts, has been a success and will continue. Efforts will also be increased to find and use open educational content.



Improving Wi-Fi on campus allows students to study throughout the day in and out of class.

**Faculty wish to teach untethered, but this requires reconfiguration of wireless networks.** Faculty wish to teach untethered so that they can roam the classroom and interact more with students. Doing so requires implementing hardware and software solutions, which may be challenging in an enterprise environment. The solution to offering an untethered teaching environment required technology network changes, which were implemented in tablet classrooms in Fall 2014.

**Simultaneous use of iPads by students in classrooms requires strengthened Wi-Fi infrastructure.** Greater Wi-Fi is needed to accommodate students who now bring 3+ devices that are actively accessing the Internet using campus Wi-Fi. As the myCSUNtablet initiative expands with more “active classrooms” and more students with more Wi-Fi devices, CSUN will continue to need to expand Wi-Fi capacity.

# Contribution and Credits

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List of people willing to address five areas of best practices.

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Students take part  
in active learning  
during class.



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### Quick Links

- Collaborate
- eLearning
- eTexts
- Learning Technologies
- Lecture Capture
- Moodle
- myCSUN/tablet
- Software for Faculty
- Web-One
- Workshop Calendar
- Workshop Descriptions

### eText Links

eText Containers

### CSUN eTexts

Here we celebrate the books that CSUN professors are creating for and with CSUN students. The list of titles is expected to reach 70 by January 2015. For a synopsis, click on any cover. [Read more about the eText Initiative.](#)



David Blumenkrantz



Paul Wilson



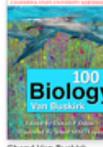
Tim Karles



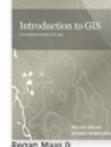
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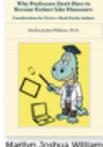
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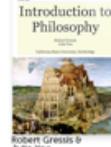
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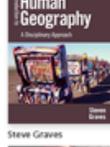
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