



UCLA

Sustainability Action Research

Green Buildings Team

2016 Sustainability Action Research

Final Report

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INTRODUCTION

As part of the UCLA Sustainability Action Research program (SAR), the 2016 Green Buildings Team researched how to maximize use of campus spaces in order to minimize resource waste. We took an alternative approach to the green buildings concept by inquiring how we can prevent need for construction of new buildings altogether. We believe that the most sustainable approach to building is to start by ensuring that existing resources are being utilized to their fullest potentials.

UCLA is the smallest UC campus (419 acres) with the largest UC student body (29,663 undergraduate students and 43,239 total enrollment), so crowds and construction are seemingly unavoidable on campus (UCLA Undergraduate Admission). Especially with regard to the recent agreement between Governor Jerry Brown and UC President Janet Napolitano to add 10,000 students to the UC system, it is imperative for the UCLA community to start using our limited campus space as efficiently as possible (UC Newsroom). However, we have found that it is not necessarily the lack of space that is the primary issue. As we examined space use on campus, we discovered that the larger issue could actually be attributed to the limited access at UCLA. The accessibility of the space, or its ease of recognition and entry by users, is a key determinant in whether students occupy the space or not. Thus, we identified two key problems with space accessibility: the lack of perceptual knowledge about available campus spaces, and ineffectual physical access to existing campus spaces. To address these two problems, we developed an action plan branching into two practical solutions.

Our first solution, aiming to combat the lack of perceptual access, is a virtual interface that catalogs the bountiful and diverse campus spaces that UCLA has to offer. Our second solution, aiming to combat the lack of physical access, is to initiate a repurposing project on a

currently underused campus space that will turn the neglected area into a functional space. With these two initiatives, we aim to bring awareness to the vast possibilities for engaging with UCLA's existing spaces, thereby eliminating the need for unnecessary construction projects and preventing resource waste.

BACKGROUND

Our team decided to tackle space use issues on campus after reviewing SAR's previous 2013 Space Use team. The Space Use team conducted an analysis of space use patterns, preferential elements in student spaces, and functional needs requested by UCLA students (Bruguera, Maya, et al. 2013). As their primary form of data collection for student input, the team administered a survey that determined which spaces were preferred by students, as well as information on how campus spaces could be improved. The team also conducted interviews with individuals who manage space on campus, such as Director of UCLA Recreation, Mick Deluca, in order to get data on the efficiency of space use on campus. Their report intended to introduce a set of guidelines for the construction of future spaces on campus for students, including the type of space, amenities, and optimal design. The Space Use team found that academic departments only had small spaces to accommodate their needs and even less space for students. From their survey, the team learned that a majority of students spend the most time in the central part of campus, but were dissatisfied by the lack of amenities those spaces currently offer. The team's recommendations included an increase in natural lighting for indoor spaces, increased amount of outlets, and continued research on space use efficiency.

The primary limitation of the 2013 Space Use team's research was their narrow scope. They focused mainly on Central Campus buildings such as Kerckhoff Hall, Ackerman Union, and Moore Hall. Within these select locations, the team's chosen contacts consisted of the associated building managers, of whom they were able to reach two. Overall, the Space Use team analyzed how students used spaces, which amenities they desired, and what kind of atmosphere students wanted when choosing a studying area. Thus, although the 2013 Space Use team was successful at identifying preliminary questions regarding space use on UCLA campus,

they were not able to implement any changes on campus based on student suggestions from their survey or interviews. In light of these limitations, the 2016 Green Buildings team set out to make connections across the entire campus, since everyone is implicated in endeavors to improve space use. In order to understand how space is used on campus before settling on concrete projects, we met with UCLA faculty and staff from the following departments: the UCLA Libraries (primarily Powell and the Young Research Library), the Library Information Technology department, the UCLA website team, Student Affairs, Associated Students UCLA, the Office of Residential Life, The Green Initiative Fund, the English Department, the World Arts and Culture Department, and more. Additionally, our team decided to analyze campus space use holistically, rather than study spaces specifically.

When researching potential interface options, our team researched CollegeNET's reservation software to conceive of how to organize UCLA campus spaces in our virtual interface ("25Live"). CollegeNET's reservation software, 25Live, is equipped with filters for users to search for specific types of spaces, such as outdoor event spaces or department building classrooms. Each location also included a brief description of the present amenities, such as maximum capacity count and types of available media technology. After reviewing the success of 25Live across other college campuses, our team sought to create our own web interface with selectable features and filters, in order to aid students in finding an optimal space with their desired amenities. We, then, located a UCLA-specific interface that used this filtered model on the UCLA Library Locations webpage. This webpage, run by Casey Grzecka and Elaine Blakeman of the UCLA Library IT department, uses a checkbox system for students to select their desired location (the various campus libraries and department buildings) as well as their desired amenities (kinds of technology, research assistance, open hours, food options,

etc.). CollegeNET's 25Live system and the UCLA Library Locations webpage were instrumental for our background knowledge of relevant space use interfaces, as they both served as successful examples of concisely organizing large campuses.

For the physical component of our project, our team conducted extensive research on the benefits of having a green space on campus. We also researched potential design plans to propose a sustainable outdoor space with its own unique purpose that UCLA does not currently have. We looked at psychobiologist and administrator Gary Felsten's research, which analyzes the qualities of spaces that allow students to relax. He found that students feel happier and more positive when more natural components are present, such as plants and trees (2009). Thus, the mental health of students became an important component to incorporate into the design plan of our repurposed space. In addition, we incorporated Associate Professor of Library and Information Studies, Rachel Applegate's study, which demonstrates that the most successful and effective spaces are flexible to the needs of the students and have the appropriate furnishings in order to encourage the specified functions in a space (2009). Finally, our fellow SAR Biodiversity Team discovered that 80.5% of their 256 survey respondents think having native plants around campus is important. This student interest in native plants supports our proposal to create a vertical garden of native plants as one of the functions of our repurposed space. From the same survey, it was discovered that despite the high interest in native plants, only 64.1% of the participants can name more than one native California species. This supports the need to place educational labels on the planters of our proposed garden. The findings from previous and current research have helped our team include the necessary elements an effective space needs in order to promote a welcoming space for relaxation and meditation.

METHODOLOGY

In order to answer our primary research question, we decided to divide our project into two separate components: student space awareness and physical space repurposing. Each project required different methodologies, but both use sustainability initiatives to improve student spaces at UCLA.

In our initial background research phase, we realized that there was no centralized information source that clearly defined student spaces at UCLA. To better understand the student perspective of spatial knowledge, we designed a survey using Google Forms to collect data from 100 undergraduate students. The survey allowed our team to obtain information about preferred student space amenities, student space locations, and current reservation system awareness. The survey also allowed us to reach a large audience of students most efficiently due to its online accessibility. We also held our first focus group with ten students, in which we interacted directly with other undergraduates to better understand the information gap regarding available campus spaces.

Our team used a business case analysis (BCA) to determine which type of publicly accessible archive of locations to create for students. A BCA is a documentation technique that clearly identifies a problem, and compares potential solutions by examining impacts, risks, and sensitivities. We deliberated between keeping the current information systems utilized by UCLA, hiring web developers to implement a new system, and creating our own website. More specifically, we analyzed interfaces including Squarespace, Facebook, and CollegeNET. Monthly domain subscriptions costs, labor costs, and time sensitivity were disadvantages discovered in the BCA, while design freedom and aesthetics were highlighted as advantages.

Our team ultimately agreed upon creating our own Facebook page, and then began the first development phase of the virtual interface project. Although it was neither the most professional, nor the most visually pleasing option, the group opted to generate a Facebook page to raise awareness of spaces on campus, due to its benefits as an existing platform, and its demonstrated popularity among students (Figure 1). We made an elaborate list of campus spaces to include, as well as their amenities. Then, we took photos of each selected location for the Facebook page.

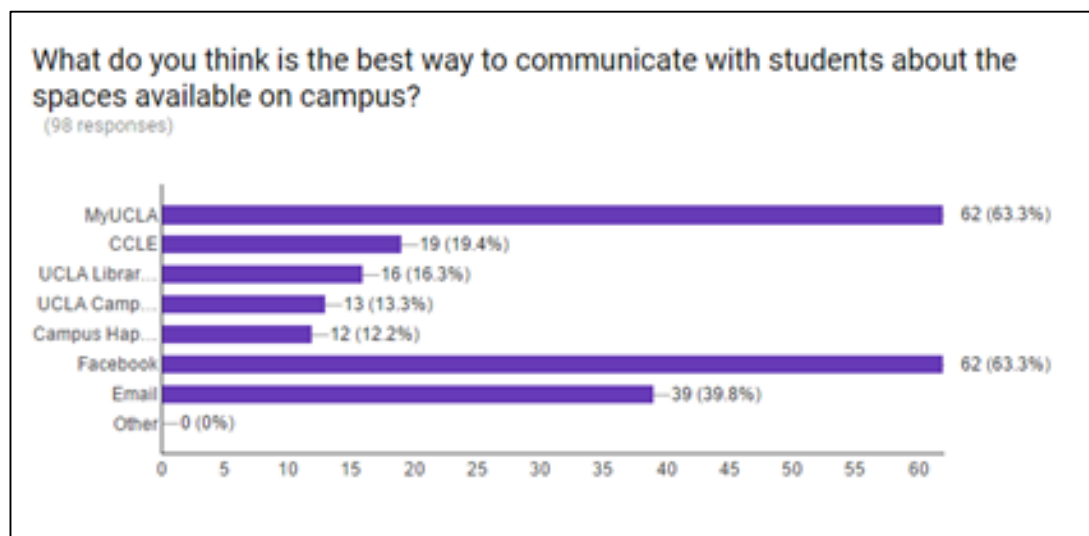


Figure 1: Results from our survey helped to determine the most effective method of communication with students. Facebook and MyUCLA are the most popular among students.

To begin our space repurposing project, we analyzed UCLA's campus and student preferences as well as ideas from other universities and sustainable spaces from around the country. To research sustainable spaces at other locations, we conducted two case studies. Our first case study researched sustainable space projects at other universities across the country, such as Pomona College and Northwestern University. Our second case study researched sustainable elements that we could incorporate into our future space, including vertical gardens, meditation spaces, and monarch gardens.

The initial stages of our repurposed space project focused on understanding student concerns and opinions through a second focus group. Using the transcriptions from the focus groups, we developed principles for students' outdoor-space preferences, to be used in our repurposing project.

We also performed a self-guided tour of campus to find a space to repurpose. This location-scouting exercise enabled our team to visually analyze potential spaces as well as take note of their current student usage. In total, we examined five spaces: the Life Science Building's balcony, Bomb Shelter's green rooftop, Boelter Hall rooftop, Public Affairs Building rooftop terrace, and the acquired North Campus space.

RESULTS

After about four months of working on this project, the Green Buildings Team has made large strides in understanding the problem of inaccessible locations at UCLA. To increase the perceptual accessibility of locations, through the virtual component of our project, we assembled an online archive of campus locations via a Facebook page. To increase the effective physical accessibility of locations, through the physical component of our project, we received permission to repurpose a space on UCLA campus and generated the key principles that students seek in an ideal space.

The virtual component of the Green Buildings team's project aims to increase perceptual accessibility to campus spaces, by creating an online resource that archives UCLA campus spaces. The first focus group that we conducted helped us to identify the information gap regarding the locations available to students on campus. This gap was fully realized through comments such as "There's no room for a large group of people to study," or "I still haven't found places in South Campus." We then distributed a survey to 100 undergraduate students, which further supported that UCLA students are unaware of the locations available to them on campus. These findings are significant because this unawareness leads to lesser known spaces being underused. For example, as seen in Figure 2, 49% of the responses stated that they had never reserved a space on campus, and when asked why, 50% responded that it was because they were unaware of how to do so.

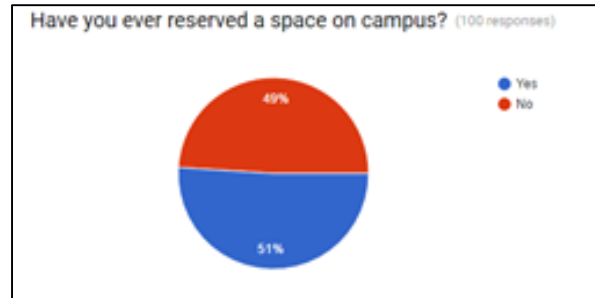


Figure 2: Survey results displaying that almost half of the student participants have never reserved a space on campus, pointing to the lack of perceptual access to UCLA locations.

Additionally, when asked where time is spent on campus out of a list of 8 locations and an option for “other,” 70% of the responses were satisfied with the 8 locations, and only 30% of the responses studied in a place not listed. UCLA has hundreds of areas available to students, but this result translates to the fact that the majority of students stay concentrated in the main libraries, unaware of other less crowded options around campus. Finally, after doing cross-tabulation survey analyses with the help of the UCLA Coordinator of Assessment Support and Capacity Building, Allison Kanny, we were surprised to learn that third year students were the ones least aware of the reservation systems on campus (Figure 3). This shows that not only do students lack knowledge about available spaces at UCLA, but because there is no source that shares this knowledge, students also remain uninformed well into their UCLA careers.

			I don't know how to make a reservation	I have no interest in reserving a space	I don't know how to make a reservation. The reservation spaces were full.	I have no interest in reserving a space.	The reservation spaces were full.	Total
What year are you?	1st Year	Count	4	3	3	0	2	12
		% within if no why not?	7.7%	18.8%	37.5%	0.0%	9.1%	100.0%
2nd Year	Count	11	3	1	1	6	0	22
	% within if no why not?	21.2%	18.8%	12.5%	100.0%	27.3%	0.0%	22.0%
3rd Year	Count	14	6	4	0	9	0	33
	% within if no why not?	35.9%	37.5%	50.0%	0.0%	40.9%	0.0%	33.0%
3rd Year Transfer	Count	4	4	0	0	4	0	12
	% within if no why not?	7.7%	25.0%	0.0%	0.0%	18.2%	0.0%	12.0%
4th Year	Count	15	0	0	0	1	0	16
	% within if no why not?	28.8%	0.0%	0.0%	0.0%	4.5%	0.0%	16.0%
4th Year Transfer	Count	2	0	0	0	0	0	2
	% within if no why not?	3.8%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%
Exchange student	Count	1	0	0	0	0	0	1
	% within if no why not?	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
Faculty	Count	1	0	0	0	0	0	1
	% within if no why not?	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
Total	Count	52	16	8	1	22	1	100
	% within if no why not?	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 3: SPSS analysis of the survey responses, which shows that third year UCLA students are the least informed about how to make reservations for campus spaces.

To help make more locations accessible to all students on campus, we successfully created and published a Facebook page, titled UCLA Spaces, that organizes and shares information on over 120 geographically categorized areas on campus. Each location is presented as a photograph with a label of the location's name. The caption of each photograph includes the hours, amenities, the location's website, a link to the location on Google Maps, and a reservation link, if applicable. The UCLA Planetarium serves as an example location on our Facebook page (Figure 4). The albums are: Young Research Library; Powell Library; Outdoor Spaces, Study Spaces, Eateries, Student Services, Computer Labs in North, Central, and South Campus (Figure 5). This page is accessible by any Facebook user. Additionally, by advertising at both the Earth Day Fair and the Ecochella Festival, UCLA Spaces currently has 247 likes and over 300

views. This comprehensive, user-friendly Facebook page allows students to have a better awareness of, and therefore access to, the available spaces on campus.

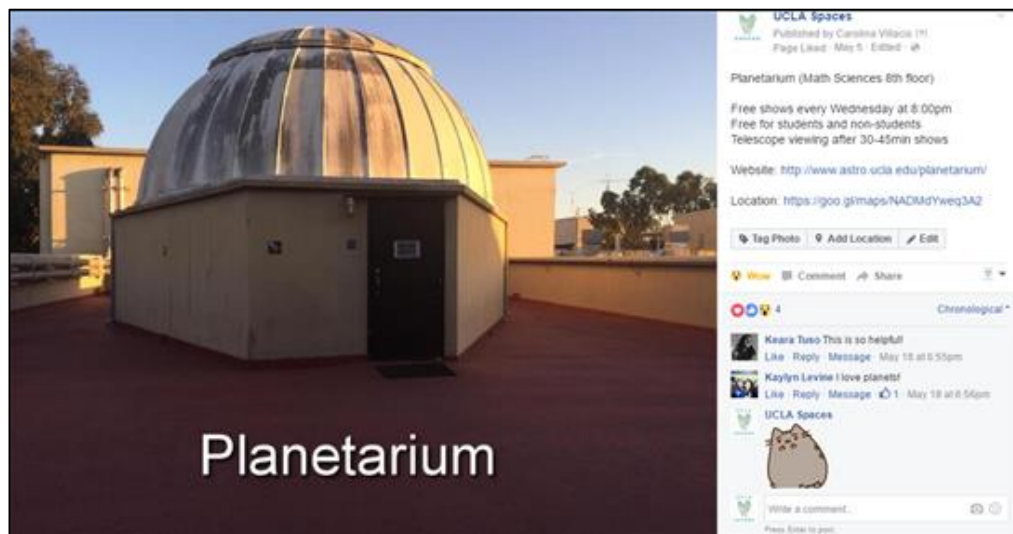


Figure 4: A sample location from the UCLA Spaces Facebook page, displaying information such as hours, amenities, a website link, and a link to its GoogleMap location.

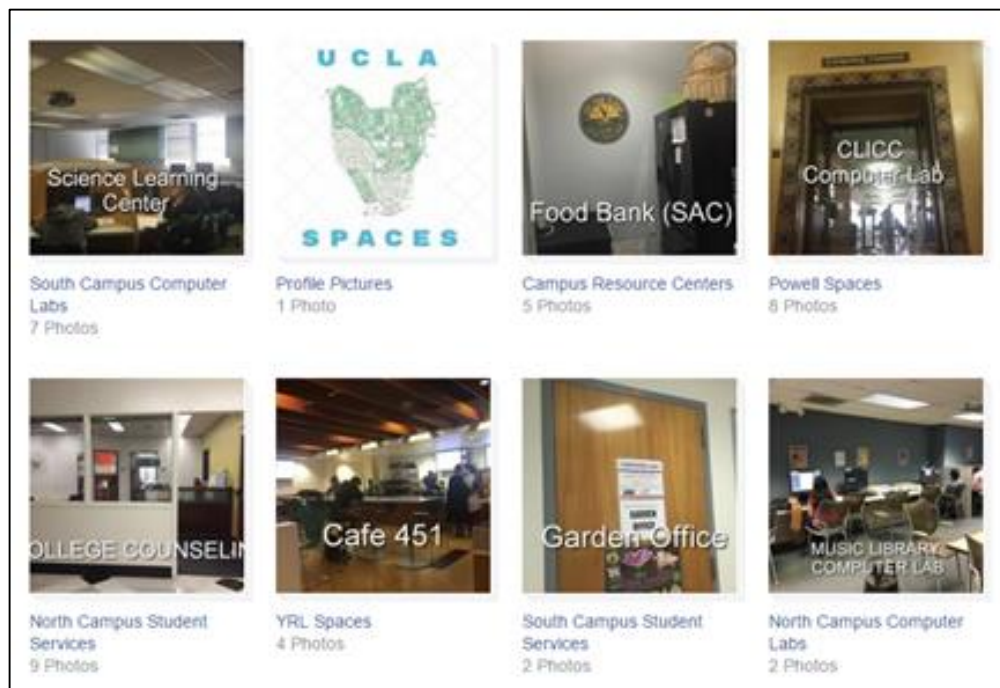


Figure 5: The albums of the geographically categorized spaces on campus, as seen on the UCLA Spaces Facebook page. Albums include outdoor areas, study spaces, computer labs, and eateries found in North, Central, and South Campus.

The tangible component of our project aims to increase physical access to campus spaces by repurposing a specific location on campus. A significant result of our project's physical component was the acquisition of an 11x9m space located between the Young Research Library and the Northern Lights Café. This was with the help of Chief Sustainability Officer, Nurit Katz, and Facilities Maintenance Manager at Associated Students UCLA, Leilani Donato. This space, which has been out of commission for over a year now, is going to be demolished by ASUCLA for our team to acquire.

The Green Buildings Team also compiled the key principles that students look for in an ideal space. This was necessary in order to understand what kind of space would best benefit the UCLA campus. Two focus groups with 14 undergraduate students provided these overarching principles that express what characteristics students look for in a space: 1) Individualism in Collective Spaces, 2) Accessibility, and 3) Specified Functionality (Figure 6). To elaborate, the first key characteristic that students value in a space is that it can enable either collaboration with others or spending time alone. The second principle for an ideal space, which also emerged from the focus group discussion, involves characteristics that enable both physical and perceptual accessibility. Comments such as “people want spaces nearest to their classes,” “too much red tape,” and simply that “it’s so hard to find space,” led us to establish this principle. Finally, our third and last principle reflects that students generally preferred areas to support specific functions, with amenities that reflect these functions.

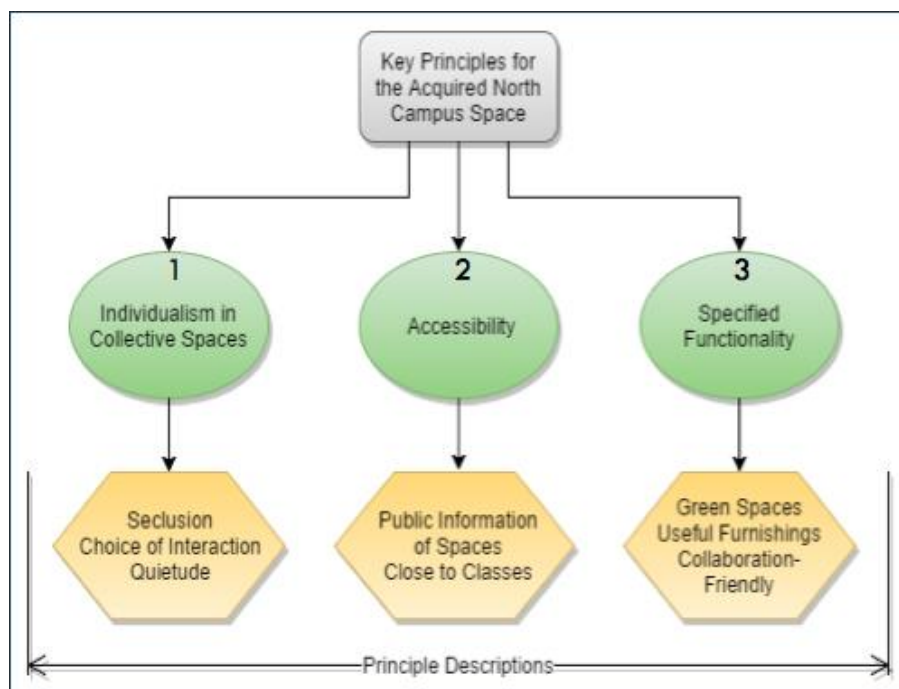






Figure 6: A diagram of the key principles considered when students choose a space at which to spend time. Derived from student feedback at the focus group held on May 12, 2016. Principles include 1) Individualism in Collective Spaces, 2) Accessibility, and 3) Specified Functionality.

The second focus group helped the team define the functionality of our space: a meditation space with vertical gardens that helps restore the monarch butterfly population (Table 1). There were a few specific responses from the students that helped us decide our space's purpose. First, students expressed their support for a multi-purposed area, which led to the dynamic combination of functionalities in our space. Second, participants encouraged the presence of native plants, in order to create a garden, while remaining conscious about sustainable water practices. Third, we were pleasantly surprised to hear that the meditation garden proposal was met with the most enthusiasm, as students shared that mental health is a matter of importance to them, especially due to the stress caused by studies. Again, after hearing the student support and after considering feasibility, our team decided to repurpose the space as a multi-purpose combination of a meditation space, with vertical gardens and milkweeds for monarch butterfly restoration.

Design Concept	Benefits	Concerns
Outdoor Classroom 	<ul style="list-style-type: none"> - Promotes learning in a natural environment 	<ul style="list-style-type: none"> - May need reservation system - Vulnerable to vandalism
Vertical Garden 	<ul style="list-style-type: none"> • Native plants would offer educational component • Collaboration with other student groups 	<ul style="list-style-type: none"> - Increased bug population could disrupt studies - No predetermined garden management facility
Monarch Restoration Garden 	<ul style="list-style-type: none"> - Conserve an endangered species - Aesthetically pleasing - Educational - Little to no upkeep 	<ul style="list-style-type: none"> - Increased bug population could disrupt studies
Meditation Space 	<ul style="list-style-type: none"> - Close proximity to nature - Bring awareness to mental health - Would be UCLA's first designated outdoor meditation space 	<ul style="list-style-type: none"> - Less potential to be multi-purpose


<p>Outdoor Hammock</p> 	<ul style="list-style-type: none"> - Additional space for relaxation 	<ul style="list-style-type: none"> - Hammocks may be stolen or vandalized - May need a rental system
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Table 7: A table that displays the benefits and concerns of the proposed functions of the acquired space. The data is based on our second focus group (May 12, 2016) responses.

CHALLENGES

Over the last two quarters, the project has changed a number of times, largely due to difficulties with finding a suitable online venue and acquiring a space to repurpose. Because of how decentralized UCLA's campus spaces currently are, narrowing down to a comprehensive project that addresses space issues was the main challenge in our beginning stages. Once we decided on our course of action—the virtual interface and repurposed space—we had new challenges present themselves.

Creating the virtual component of our project led to a number of difficulties. We initially sought professional web developers to help us create a website attached to MyUCLA (the official UCLA webpage) with an organized space use plan and links to reservation sites. It became apparent that this would be a difficult path, as we would need to hire front- and back-end web developers, as well as have considerable funding. During this process, we realized we did not even have a full scope of what the website would look like and thus created wireframes for a website. The process was very slow going. After receiving the results for our survey, data displayed that students most prefer to use Facebook as their source of information about UCLA. Our group began brainstorming and we created a Facebook page as a prototype for a future official website. The challenges with considering the conversion to an official website are not over, but students have a resource that is available for students in the meantime.

One of the most complicated challenges we faced was acquiring a space on the UCLA campus to repurpose. While we had looked into five different spaces, the most crucial step was making contact with supervisors that would allow us to create a green space. Chief Sustainability Officer, Nurit Katz, was our connection with the North Campus acquired space in North Campus. The biggest challenges for acquiring the space were first proving that this neglected

space had great potential, coming up with satisfactory design plans (which are still underway), and coming up with a plan for making sure the space is maintained (also underway).

CONCLUSION

I. Future Recommendations:

Our team recommends the energetic continuation of space use research in the future, especially as concerns about space use heighten with the expansion of UCLA's population of scholars.

For the UCLA Spaces Facebook page, we recommend that the team conduct outreach to incoming freshmen and transfer students in the Fall 2016 quarter, as these are populations that would benefit greatly from a comprehensive archive of campus spaces and resources. The team should survey these populations upon garnering more attention to the page, in order to gauge the efficacy of the page. Depending on the feedback from the page users, the team should consider converting UCLA Spaces from a Facebook page into its own autonomous webpage, whether that is independently through a free web-host such as Squarespace or officially on the UCLA website. If this option of an autonomous UCLA Spaces webpage does seem viable, then the team should consult the 2016 Green Buildings Team's "UCLA Spaces Website Business Case Analysis" document, which compares the various web options. Additionally, throughout these endeavors, the team should connect with other campus organizations who are starting similar space information projects, such as: the USAC Facilities commission's website detailing UCLA's various space reservation systems, and the Office of Residential Life's desire to create a virtual interface that details campus resources for UCLA students. In addition to helping with the formation of an autonomous UCLA Spaces webpage, these related organizations may also assist with maintaining the page for years to come.

For the repurposed space, we recommend that the team move forward with design plans to convert the acquired North Campus outdoor space into a native garden and student meditation

space. The team should conduct heavy research into California native plants and vertical gardening methods, specifically in planters as opposed to directly in the earth. Useful resources for this research include: the 2016 Biodiversity team's final report on native habitat restoration on UCLA's Sage Hill, the Theodore Payne Foundation, and Tree People's environmental education toolkits on starting native gardens. Another important resource to follow the concrete design plans for the repurposed space is UCLA's The Green Initiative Fund, which can provide funding for planting in and furnishing the repurposed space. An ideal time to begin the fund application and design execution process is in the Fall 2016 quarter, as young native plants tend to fare best in fall weather. Throughout these endeavors, the team should connect with campus organizations, such as: the Botanical Gardens, E3 student group, DIG student group, and the Mental Health Initiative student group, and the campus-wide Healthy Campus Initiative.

In addition to these two main projects, the team should pursue associated projects that stem out of the research on campus space use. Current interests include founding a hammock rental program as a part of CLICC rentals in the Young Research Library in order to further boost the relaxing qualities of the repurposed space.

The project of understanding how to better utilize campus-wide space is an inherently interconnected effort. Therefore, as the team continues with space use research, collaboration with other campus organizations should be prioritized as a central objective.

II. Overall Impacts:

Overall, the 2016 Green Buildings Team's projects promote more conscientious attitudes toward navigating UCLA campus. Space use is not just a physical concern, but it also holds great personal and social implications for student life. Our campus is not merely a backdrop, but rather is a key player in student success, as positive engagement with campus resources is vital

for scholars. For this reason, our space use project has allowed us to fully incorporate student-voiced concerns into innovative sustainability initiatives. We have also been working both behind the scenes and upfront in the sustainability movement. Our UCLA Spaces Facebook page addresses the less visible issue of a general lack of awareness about campus spaces, while our repurposed space will help make green efforts, specifically native plant restoration, much more visible for the UCLA community. Ultimately, our aim has been to remain resilient and adaptable in tackling the large task of understanding how space is used on our campus.

Our UCLA Spaces Facebook page will not only bring attention to the lesser known campus spaces, but it will also spread awareness of all spaces across the oftentimes divided North, Central, and South campuses. Cross-campus space usage will help to better distribute student populations, and may also boost academia's movement towards interdisciplinary studies. Additionally, our repurposed space will help facilitate environmental education through the creation of native habitat for nonhuman nature. As students learn about the importance of caring for the environment in this space, they can also take the time to reflect on their own sense of mental health and wellness through outdoor meditation. In these ways, each of these sustainability projects contributes to a more informed and engaged student body.

All in all, our team has and will continue to bridge connections across the vast, diverse resources that UCLA has to offer under the umbrella of sustainable space use. We view the UCLA community as a thriving ecosystem that must be sustained, with regard to both a healthy environment and student body. Thus, with the creation of our virtual interface and repurposed space, we make our contributions to understanding the interconnections between student wellness and environmental consciousness.

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APPENDICES

- A. Green Buildings: Action Research Team Literature Review
- B. Survey for Space Use Analysis for Future Website
- C. Transcription of Focus Group for Student Input on Spaces on the UCLA Campus (Held on January 22, 2016)
- D. Transcription of Focus Group for Student Input on Space Design (Held on May 12, 2016)
- E. Website Business Case Analysis
- F. Outdoor Space Principles

A. Green Buildings: Action Research Team Literature Review

Introduction

Repurposing unused spaces involves the detailed planning in space utilization, sustainable furniture, analysis of its outdoor/indoor space, and a LEED approved design. Detailed research of these elements will help provide a criteria and foundation for the preferences individuals have in regards to an attractive as well as sustainable space. Using the methodologies observed within these sources will help shape the formation of our project of repurposing a space for the community.

Research Compilation: Summaries

I. Space Utilization

On its Space Planning website, Cornell University's Space Use Advisory Committee (SUAC) identifies space planning as "necessary to provide adequate and appropriate program space during this capital constrained period when the University can no longer rely on newly constructed space to meet growth needs" (*Space Planning*, 2010). The website provides various resources published by SUAC, such as guidelines for space needs studies and space management principles.

Furthermore, one of SUAC's publications regards the need for implementing a centralized scheduling tool, in order to "enhance operational efficiencies and data collection, and gain further understanding of room utilization" (*Use of Central Scheduling Tools*, 2014). The specific product they use is CollegeNET's scheduling and resource management program called Series25, which is an all-in-one, mobile-accessible schedule/space optimizer.

At UCLA, the 2013 Space Utilization team focused on the repurposability and accessibility of existing spaces on campus (Bruguera, 2013). Within this process, the team contacted several building managers in order to obtain data about the spaces within these buildings. Lastly, the team conducted surveys to evaluate space use from a student's perspective in order to target the neglected/unused spaces on campus.

II. Energy Efficiency

In many developed countries like the U.S., the largest consumer of energy is buildings, which account for approximately 40% of the nation's entire primary energy use (Anderson et al. 2015). In studies to calculate energy use in various situations, Anderson et al. and Masoso et al. collected and analyzed energy use in 1000 dorm rooms in South Korea and 6 commercial buildings in Botswana and South Africa, respectively. In Korea, an average of 869 kWh, or 30.2% of the total annual energy use was wasted in vacant spaces due to things such as refrigeration, heating, and lighting, whereas it was over 50% in Botswana and South Africa (Anderson et al. 2015 & Masoso et al., 2009). It was concluded that the amount of energy used while present is proportional to the amount used while vacant, so it is worth investing in behavioral interventions such as increasing people's environmental conscientiousness, as encouragement to turn off lights and TV's, and unplug equipment when leaving rooms.

III. Student Spaces

The physical design of indoor student spaces is important in terms of analyzing student learning and productivity. The "physical structures" of a student space impact the productivity of student collaboration (Simon 2010). More specifically, furniture layout and space utilization can help or impede communication between students (Simon 2010). Also, lighting with "accessible controls that adapt" to various student needs are crucial to enhancing space functionality (Simon 2010). Lastly, the air temperature of student spaces impacts student

productivity. If the air temperature goes “above 74 degrees Fahrenheit,” the math and reading skills of students can decrease (Simon 2010).

The aesthetics and natural ambiance of student spaces affect the cognitive abilities of students. Students need “images of nature,” or actual nature, to help with “cognitive fatigue” (Felsten 2009). In order to feel mentally restored, students prefer viewing nature either “through windows” or in actuality to relieve stress and regain “attention restoration” (Felsten 2009). Indoor settings containing “large nature murals” can suffice for areas with limited access to the natural world (Felsten 2009).

Space flexibility is another important factor when considering the efficiency and capabilities of a campus repurposing. Libraries are the preferred student space for individual and group studies, but need to have a “surge capacity” that accommodates students as usage increases during the quarter or semester (Applegate 2009). Effective space designs take into consideration “a wide range of student needs,” and provide flexibility for studying, group meetings, and more (Applegate 2009).

IV. Sustainable Furnishing

When buying furniture from a company for academic use, it is important to create a system of guidelines regarding what it means to be sustainable and how to determine whether a company is compliant of that criteria. Various criteria that may be considered include: any wood used in the furniture must be certified sustainable- implying that it has been recycled or reused, no carcinogenic or hazardous chemicals or materials were used in manufacturing, Volatile Organic Compounds (VOCs) are found minimally on the product and at the production site, the packaging must be recyclable, the product must be designed for disassembly, and the supplier itself must follow socially responsible procedures (“Purchasing”). In addition to purchasing, The University of Queensland (UQ) identified alternative methods of obtaining sustainable furniture such as a “resource exchange event for staff when building areas are refurbished to encourage the reuse of office furniture and equipment,” and Sustainability Procurement training for staff to better understand the requirements for acquiring environmentally friendly materials (“Purchasing”). The importance of working with companies that have a socially responsible and ethical strategy is also key in determining whether or not they are suitable as a sustainable supplier.

Other universities have created guidelines contingent with the sustainable purchasing strategy, such as American University (AU), which not only set criteria, but has goals in place for future purchasing. The goal is that 40% of the cost of goods will be spent on sustainable furniture under certain conditions. These conditions include the product containing post-consumer or post-industrial materials, containing at least 70% salvaged materials either from off-site or on-site reuse programs, containing renewable materials, containing materials harvested within 500 miles of campus, and certified by the Forest Stewardship Council (*University Policy: Sustainable Purchasing*). The sustainable purchasing form also identifies a goal of toxic waste reduction by reducing the mercury found in lamps and of purchasing sustainable “ongoing consumables,” which “refers to low-cost-per-unit materials that are regularly used and replaced through the course of daily business operations” (*University Policy: Sustainable Purchasing*). The criteria for ongoing consumables is essentially the same as the sustainable furniture but also includes discussion of rechargeable batteries and specifying rapidly renewable materials rather than simply renewable.

V. LEED Certification

Two prior ESLP Green Buildings teams focused on the LEED certification of buildings at UCLA, but the 2014 team focused on gathering the credits needed for LEED accreditation while the 2012 team focused on communicating the importance of educating the community . The 2014 Green Buildings team focused on compiling all of the necessary credits needed for LEED certification for the residential dorms on the Hill that haven't been LEED certified (Canyon Point, De Neve, Courtside, Covell, and Bradley). While searching for the remaining credits, the 2014 team reached out to other UCLA staff members who had the water, waste, and air credit information needed to start the process for LEED accreditation. These contacts included Aliana Lungo-Shapiro (Sustainability Manager for UCLA Housing and Hospitality Services) and the stakeholders of other ESLP teams (Hirashiki et al. 2014). Contrary to the 2014 team, the 2012 team put its focus into finding the most effective methods for educating students about the LEED accreditation process. With the help of the Green Buildings stakeholder Todd Lynch, the 2012 team was able to create physical panels to put on the outside of the LEED certified academic buildings in an effort to inform students of each building's level of sustainable design (Bains et al. 2012).

Discussion/Methodology

I. Observational Study

Observational studies are a research method in which researchers do not interact directly with participants. This methodology was used in a space flexibility study by researchers in public urban university campuses (Applegate 2009). To make spaces relative, the researchers used a 'percent of capacity' calculation in to make comparisons equal in the data analysis phase (Applegate 2009).

II. Statistical Analysis

Statistical analysis was done to compare significances between single and double rooms as well as to compare the significance between energy use when the tenant was present and when the room was vacant. Standard deviation is also a very useful tool implemented to see the variation in the data and understand other possible factors that play into energy consumption. Displaying information in graphs are a very efficient way to present information because the audience can visualize the data in an otherwise text-heavy report. Performing energy audits in the vacant rooms on campus to obtain quantitative baseline information of how much energy is being wasted would also be a good way to provide objective, and easily comparable data. Both studies perform a very detailed analysis, in that they consider the effects of seasons, peak energy times, and the room occupancy numbers to the collected data.

III. Survey

Survey research involves participation by selected or random individuals in which data is obtained voluntarily. A research-based psychology class at universities in the midwestern United States used survey methodology to answer questions about situational feelings (Felsten 2009). The situations included student spaces with no views of nature, window views of nature, nature murals without water, nature murals with water (Felsten 2009). Administering and analyzing surveys was an essential part of the 2012 and 2014 Green Buildings team's research and evaluation of how familiar individuals were with LEED buildings and its certification process. The 2012 team surveys to measure the community's familiarity with LEED processes concluded that less than one third of the participants were familiar with LEED standards and buildings that resided on campus (Bains et al. 2012). With this qualitative research, the 2012 team was able to implement plaques outside of LEED certified buildings in order to emphasize its importance and educate students of structures with sustainable designs. Similarly, the 2013

Space Utilization team was able to determine the unused spaces on campus from surveys students participated in. This data was implemented in their recommendations for space use throughout campus.

IV. Literature Review

Past literature reviews in related fields have been conducted to analyze the data collected over time. In particular, an extensive literature review of classroom physical design was performed in 2010 (Simon 2010). It summarized the findings of past research and categorized data based on space size, shape, furniture, technology, lighting, color, and noise level. Past ESLP Green Buildings team's final reports were used as guidelines in terms of knowing who to contact for LEED credits. To access waste or water credits, the contacts used within the prior final reports would be useful sources to contact the UCLA building managers who are in charge of any of the repurposing spaces (Hirashiki et al. 2014). Even though the 2014 Green Buildings team didn't discuss the method of counting the credits in detail, their processes are able to be accessed through our stakeholder, Todd Lynch and other contributing contacts.

V. Published Guidelines

Published guidelines are useful in terms of forming criteria centered around a standard set of procedures. The article from the UQ provided a set of criteria for sustainable purchasing in accordance with environmental guidelines. It discussed different points of interest when buying furniture like the materials, company's social policies and the reusing capabilities. Likewise, AU's sustainable purchasing form gave explicit instructions on what conditions should be looked when purchasing furniture like the type of material, the location of the manufacturer, and the compliance with Energy Star. AU has set goals for future sustainability endeavors that include an increase in sustainable furniture purchasing and a reduction of overall energy usage.

SUAC is a part of the Green Buildings sector of Cornell's overarching Climate Action Plan (CAP) to reduce greenhouse gas emissions on campus. It is composed of 8 members who are vice provosts and vice presidents in charge of various departments including Capitol Projects & Planning, Budget & Planning, Facility Services, Human Resource & Safety, Student & Campus Life and more. Therefore, much of their work thus far has consisted of publishing guidelines and standards for Cornell's overall space management. By establishing precedents for space management, such as a standardized proposal process for groups wanting to repurpose a space, SUAC is paving the way for future projects to unfold.

VI. Tools

In "Use of Central Scheduling Tools," SUAC delineates their plan to install the Series25 program in order to provide a comprehensive interface for accessing and reserving instructional and event spaces. This program allows for user-friendly access for students and staff to reserve rooms for a range of purposes that vary from club meetings to faculty events.

Conclusion

Ultimately, these sources will help shape our criteria for repurposing spaces through their methodologies and detailed research. By evaluating the qualitative research taken from surveys, the preferences of students will be better implemented with their needs in mind when designing a space. Furthermore, the use of statistical analysis will provide quantitative information on the energy costs of a space as well as how many students seem to be using the targeted space in the present day. By paying attention to sustainable design while implementing the qualities of a space students desire, our team aims to create a repurposed space that will no longer be neglected, but enjoyed.

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B. Survey for Space Use Analysis and Information for Future Website

UCLA Space Use Survey

Conducted by the UCLA ESLP ART Green Buildings Team 2016

* Required

What year are you? *

- ☐ 1st-Year
- ☐ 2nd-Year
- ☐ 3rd-Year
- ☐ 3rd-Year Transfer
- ☐ 4th-Year
- ☐ 4th-Year Transfer
- ☐ Other :

What is your major? *

- ☐ Social Sciences
- ☐ Humanities
- ☐ Visual/Performing Arts
- ☐ STEM
- ☐ Economics/Business
- ☐ Undeclared

Where do you currently live? *

- ☐ Campus Housing
- ☐ Off-Campus, Local
- ☐ Commuter

How many hours outside of classes do you spend on campus, on average daily? *

- ☐ 0 - 1 hour
- ☐ 1 - 2 hours
- ☐ 3 - 4 hours
- ☐ 5+
- ☐ I don't spend time on campus.

Do you spend more time on campus during midterms and finals weeks?

- ☐ Yes, a few more hours. (1-3)
- ☐ Yes, substantially many more hours. (3+)
- ☐ I spend the same amount of time on campus all 10 weeks.
- ☐ I don't spend time on campus.

Where do you spend your time on campus (outside of classes)?

*

(Check all that apply)

- ☐ Powell Library
- ☐ Young Research Library
- ☐ Kerckhoff Coffeehouse and Patio
- ☐ Ackerman
- ☐ Janss Steps grass
- ☐ English Reading Room
- ☐ Bombshelter
- ☐ North Campus Student Center
- ☐ None
- ☐ Other: _____

For what main purposes do you regularly use spaces on campus?

(Check all that apply)

- ☐ Study space
- ☐ Group meeting space
- ☐ Hangout space
- ☐ Dining space
- ☐ None, I don't use spaces on campus
- ☐ Other: _____

Which amenities are important to know about in campus spaces? *

(Check all that apply and please include response(s) if 'Other' is checked)

- ☐ Electrical outlets
- ☐ Food
- ☐ Drinks/Coffee
- ☐ Microwave
- ☐ Tables or desks
- ☐ Printers
- ☐ Whiteboard
- ☐ Projector
- ☐ Quiet Spaces
- ☐ Group Study
- ☐ Other: _____

What resources do you currently use to find out about available spaces on campus? *

- ☐ Interactive Campus Map
- ☐ MyUCLA Website
- ☐ Recommendations from friends/classmates
- ☐ Google
- ☐ Other: _____

Have you ever reserved a space on campus? *

☐ Yes

☐ No

If yes, which space(s) have you reserved in the past?

Short answer text

If no, why not?

(Check all that apply)

☐ I don't know how to make a reservation.

☐ The reservation spaces were full.

☐ The reservation space did not have the amenities I wanted.

☐ I have no interest in reserving a space.

☐ Other...

Which locations would you like to have more information on, in terms of amenities?

(Check all that apply)

☐ Libraries

☐ Outdoor spaces

☐ Ackerman

☐ Kerckhoff

☐ Cafes

☐ Department buildings

☐ None

☐ Other...

...

What reasons are most important to you when selecting a space to use on campus?

(Check all that apply)

- ☐ Amenities (technology, furniture, food, etc.)
- ☐ Level of noise/crowdedness
- ☐ Proximity to classes
- ☐ Proximity to parking
- ☐ Indoor space
- ☐ Outdoor space
- ☐ None, I don't really care
- ☐ Other...

What do you think is the best way to communicate with students about the spaces available on campus?

(Check the two most applicable)

- ☐ MyUCLA
- ☐ CCLE
- ☐ UCLA Library (www.library.ucla.edu)
- ☐ UCLA Campus Map (maps.ucla.edu/campus/)
- ☐ Campus Happenings Page
- ☐ Facebook
- ☐ Email
- ☐ Other...

C. Transcription of Focus Group for Student Input on Spaces on the UCLA Campus (Held on January 22, 2016)

Question 1: What are the places on campus you like to spend time at and what qualities of that space that attract you to it?

- I love the sculpture garden and I like that it's a nice green space and an open area with things to look at. Sometimes if you're sitting at Royce there's nothing to look at because everything is flat and it's awkward because there are so many people walking by. [The sculpture garden] is nice because it is secluded.
- I agree because I hang out in the sculpture garden a lot and I like to just look out at it. I like it because it is more secluded. There are benches and it's not flat and it is hilly so you can't see what other people are doing.
- I like the benches behind Powell because it is quiet even though there are a lot of people around. If you sit closer to Powell it is much quieter and there are places to sit.
- I like going to the tables near the restaurants because there's tables.
- There are certain places I like to go to when waiting in between classes because it's easy to get to on my bike. I like to go to the hill by Jan's steps and near Powell there are grassy areas near the bike racks.
- I like Powell because there are separated little spaces and there are places that I can do what I need to do.
- To be honest, the 4th floor in YRL because no one goes there because no one goes there and there are a lot of tables. it's a good place if you don't want to be outside and you want to be somewhere quiet.
- I like spaces that create the illusion that you're alone and have privacy.
-

Question 2: What are the most important qualities of a space that you hang out at?

- It's peaceful and you feel at peace there. There's something peaceful about sitting on the hill near Janss steps even though there are people around you.
- I like the spaces where you have some agency in terms of interacting with people so it's nice where you can be alone or attract/interact with others.
-

Question 3: What are the areas on campus that you think can be improved/there should be more of in terms of study spots/meeting spots?

- I guess that's a good point if you're looking for a good spot to study or have meetings. You don't know if there are available rooms. This makes it hard to reserve rooms.
- I think there's also a divide between north and south campus because I've had to go to south campus for meetings and I realize that there's a lot of space there to utilize because I spend so much more time in North Campus. But I still haven't found a lot of places yet.
- I think it's hard to find spaces for a large group of people. there's no room for a large group of people to study either.
- For most of the spaces around here you have to make an appointment and sometimes it's of short notice and you don't have time to reserve a room.
- This is the largest UC but it's so hard to find space.

Question 4: North Campus majors, do you ever spend time in south campus?

- I hang out at subway in the bomb shelter because it's the most cost efficient food on campus.

- There's not a lot of places to hang out near Franz.
- I only go to south campus if I have to walk through there or sometimes I study in the biomed library because it is really quiet there.
- There seems to be more spaces in North Campus to sit and hang out instead of South Campus.

Question 5: South Campus majors, where do you go to hang out?

- In Ackerman there are a lot of seats near the art gallery. In this one specific spot it's extremely quiet and nice to study.
- I usually stay in south campus unless I have a discussion. I mainly stay near the huge square in the middle of campus or near Bomb Shelter where there are a lot of tables.

Question 6: Do you like more outdoors or indoors areas?

- I really like Anderson. I think it's a really nice combination of natural lighting that makes you feel like you're outdoors but you're inside. I personally like indoor spaces because it's more convenient and comfortable in terms of temperature. you can also open the windows and have comfy chairs.
- I think YRL spaces where they have their own pods. I think planter boxes would be really nice instead of seeing blank white walls.

Question 7: How do you feel about the reserved areas for events on campus?

- I think the events are great because you have the chance to go to a different space on campus that you wouldn't usually go to. It would be cool to introduce integration of both campuses.
- To make an event it's a struggle to reserve a space. if you have a space that is open and you could reserve it, that would be nice.
- if Ackerman would be centralized in terms of reserving space, that would be great because right now it's too hard to try to reserve a space in that building.
- I have a suggestion for if you do open up any student spaces it would be a good idea to do an online system where students can see if it's open and students can book it online. If it is designated for students it's easier online than to look up a phone number and call the building reservation system, it's too much red tape to go through.

Question 8: To what extent do you want a space to be furnished?

- I think furniture is necessary because a majority of the time it will be a student studying in between classes. I think if you place it strategically you can have a lot of space and have the option to communicate with people or to keep to yourself.
- Is there a picture to see a space? It would give us a better picture of what the space looks like and would help create a mental image for us.
- Even if you change all these things, do you think people will actually use these spaces? (in terms of Boelter Hall).
- When I sit at Kerckhoff patio outside, the benches and tables are dirty and there's things from trees always falling on me and the sunlight is too harsh for me to use my laptop.
- I think people would go to bolter hall. I think space is limited and if you do open up a new space people might be able to use it.

- I want a space that is a mix of I'm already there and I don't have to walk far. I think people want spaces nearest to their classes and that is the biggest factor. If you make the space attractive enough, I think people will go.
- I think there's a lot of flexibility to be able to have furniture you can move for events but then put back for the students to use.
- It wouldn't be bad to use that grad space for some undergrads.
- It seems like a lot of grad students use a lot of the spaces in North Campus.
- In Berkeley there are a lot of major spaces that engineers or creative people can go to talk about ideas and suggestions on how to build things. I feel like having that kind of space will be good and the spaces in YRL cater to that. It wouldn't be a quiet space, but it would be a space that you can talk and collaborate in without having to reserve spaces.
- I think the rooftop of Anderson may be a good place to put some kind of furniture that. [Anderson rooftop] is very accessible as well.

Question 9: If you had to choose what kind of space would you want the most?

- I would want a space for meeting.
- Especially if you're on the hill there are a lot of other spaces to study but there aren't enough spaces to freely talk.
- I would say more collaborative spaces. I know there are the pods in YRL are good but you have to reserve them.
- Performance spaces of concentric benches/seating arena style for those types of meetings would be a good idea.
- The cafe one is really attractive and it would be good for many people to go. They would go for the ambiance and the events hosted there.
- I think a coffee machine or places to get beverages would be a lot more attractive than a vending machine.
- Sleeping spots would be good.

D. Transcription of Focus Group for Student Input on Space Design (Held on May 12, 2016)

Rachael: A brief introduction to our project: so this is our team minus one, Carol, who isn't here. But we're having a focus group right now about what students want in outdoor spaces, so like what qualities and elements they are attracted to when they are studying or just hanging out outside. That will go towards our project: part of the Sustainability Action Research program with the IOES, where we've been working on this research on how space is used on the UCLA campus since January. We've just heard word that there's this little space outside of YRL—I don't know if you guys have seen it. It has caution tape out around it. (no answer) Mmm, maybe not. It's in a less traveled area. So basically it's a big platform—it's bigger than this room—but it's completely unused right now so we've been working with ASUCLA to get permission to work with this space and now that we have it, we're trying to learn from students about what they actually want it to be. We have some ideas about what we want to put there, but we wanted to run it by you all first because you guys are going to be the ones using it. We have some questions that we can start with, but we can do introductions first. I'm Rachael. I'm a leader on this team. We're the Green Buildings team. And I'm an English major and an Environmental Systems and Society minor.

Keara: I'm Keara; I'm a third year Environmental Science major and I am also a part of the Green Buildings team.

Leah: I'm Leah; I'm a Geography/Environmental Studies major.

Kaylyn: I'm Kaylyn; I'm a senior Environmental Sci major and GIS minor also on the team.

Marc: Hi I'm Marc. I'm a first year Physics major and I live on the sustainability living floor.

Mariko: I'm Mariko I'm a first year PoliSci and Linguistics and Spanish double major. I'm also on the sustainability floor.

Tyra: Hi I'm Tyra. I'm a transfer student.

Jesse: I'm Jesse Flores. Third year. I live in Sproul hall.

1. For what purpose would you spend time in an outdoor space—study, hangout, relax, meeting, etc.? Why?

Rachael: So our first question we wanted to start with is pretty general—Are you guys okay with being recorded so we have your responses?—Our first question that we have is, for what purpose do you spend time outdoors? Whether that's to study, hangout relax, etc. Just jump in, and help yourselves to some snacks.

Mariko: Yeah, when it's a nice day I sometimes head out to the lawn just outside of Powell to do homework and hang out with friends outside.

Marc: Yeah when it's not too hot or windy I like to just sit at the tables and do my work there. I prefer it to working indoors.

Rachael: Why is that?

Marc: I think it's nicer. Fresher I think. Feels less cramped.

Jesse: I actually don't do my homework outside. I usually go outside to escape my homework. So when I go out to run with the running club I go outside—or usually when I'm on phone calls.

Tyra: I was gonna say that I don't really study outside because sometimes the spaces outside are wet or something like that so it makes me uncomfortable. But to be outside is more like when I'm trying to get out from being on the inside studying and sitting. And usually that space is for me to sit in quiet, or to use to talk since you're not in a room hearing like 8 voices at once.

Jesse: Usually when I do group projects, it's outside. But when I'm doing homework individually it's inside.

2. What qualities do you enjoy about current outdoor spaces?

Rachael: So for our second question, we wanted you to get a little more specific about what qualities you enjoy about current outdoor spaces. Like were you (Mariko) talking about Janss Steps? So the specific spaces you do go to right now—which if you wanted to know more about, we have a UCLA Spaces Facebook page now where outdoor spaces is one of the categories—at the spaces you do hang out at outside, what are the qualities that you enjoy about them?

Mariko: I like the view of campus. I think it's so pretty and when the weather is nice. Being in the sun or in the shade depending on how hot it is. I just enjoy nature. It's my personal preference.

Marc: Yeah, definitely being with the trees and with the plants, especially being in an urban environment. It's quite relaxing I think.

Jesse: I mean usually just being in SoCal, I love the sun, so especially when it's breezy with the sun and the breeze combined, and it's not too hot or it's not too cold. Usually again, when I'm outside, I'm running around, so I like space that allows me to exercise... recreational use. So like Janss Steps, even though a lot of people don't like going up the steps, I love going up the steps. So I try to make use of all the space in terms of exercise.

Tyra: In terms of being inside all the time: like in here, right now, it's really stuffy—like it's really hard to breathe. So like going outside to get to breathe... Like once you leave YRL, it's like you're in another world. I just feel like students like outdoor spaces to get outside of the inside spaces. It's very anxiety-driven inside. So outside is a way to get away from that.

Jesse: Somehow they could complement one another. Like in certain study areas on The Hill where you have huge windows and you can see outside: so being inside but then having the view of outside. So it's a nice complement even though technically you're not outside.

Mariko: I feel like outdoors though is a lot more peaceful. Like indoors, everyone is stressed out doing their work in libraries and stuff and you go outside, it's a very relaxing environment. And you can stare at people sleeping in hammocks and stuff.

Jesse: That's why I don't do homework with other people. So yeah I agree with you on that.

3. Do you have an outdoor space on campus you regularly spend time at, and if so, why do you go there?

Rachael: So this was kinda answered already, but do you have an outdoor space that you regularly spend time at, and why do you go there? If you have anything specific in mind.

Mariko: Besides the side of Janss Steps, the hill area. I like it because it's a pretty view and it's peaceful.

Marc: The space between Kerckhoff and Moore where there are a lot of tables (Kerckhoff Patio). I go there a lot. It's pretty well located too because it's not far from any building as well.

Jesse: For Bruin Runners, we meet at the top of Drake Stadium so where it branches off from Bruin Walk and that area is very shady and because there are trees and it's a nice place to meet. It's a big space.

Mariko: Sometimes I like sitting in the sculpture garden as well. Completely forgot about that.

Tyra: I like the space—which is kind of odd—but the space in between Powell and the Humanities Building. Right now they're redoing that area but I've spent time there and actually

got to focus and what's really nice about that area is since it's blocked between two buildings, it's not very windy where. When it's windy you don't really want to go outside because it gets cold, so it blocks off that space. I think I read like half of a book. I was relaxed there.

Rachael: Are there benches and stuff?

Tyra: Yeah there are benches.

Mariko: And behind Powell too. It's nice I go there a lot.

4. Does studying outside affect your stress levels?

Rachael: Yeah I didn't know about any of these spaces until we had to make that site. So many places. So this is our last question before we go into the Powerpoint where we show you our ideas and get your feedback. Does studying outside affect your stress levels, in any direction?

Mariko: I think it lowers my stress levels because like I said before it's a lot more relaxing outside and you don't need to worry about people around you and it's just you in your own personal space, wherever you want to be.

Marc: Yeah I think just caring about one kind of work that I'm working on. When I'm working at my desk I have all my textbooks facing me which shows all the work I have to do. But if I can just focus on one thing outside, it's a lot less stressful.

Jesse: Taking that into account, I like having all the stuff in reach at my desk. I feel like everything's more organized indoors at my desk but going outside is that nice break away from being indoors. Especially a change in environment benefits studying so I would use outside just as a break.

Rachael: Yeah it's funny because whenever we ask questions about outdoor spaces, people are always like well it's not good for studying. Guys, you don't always have to be studying here! But that's a good point.

Tyra: I guess it lowers your stress levels. If you find a nice spot outside, I'd much rather be outside than inside because it's not stuffy, and to be inside watching everyone study which is the nice thing about... actually no, ignore that.

Leah: If you could maybe envision your ideal space on campus that's outdoor what kind of amenities and what kind of nature do you want in it? And how much nature vs urban traits? Like chairs, tables or concrete or grass and a blanket.

Mariko: I don't think grass is good because we're in a drought and grass is not like—when you see grass, like green grass, I'm pissed off—but what would be nice about seeing outdoor spaces is seeing California plants and succulents because they're really cute. In terms of that, not grass and also not concrete because it gives you that kind of feeling, but that would be cool if it was California native plants and stuff like that.

Tyra: I like the way the benches are set up behind Powell because you get some of the trees and like nature but then you have the benches where you can sit.

Rachael: Are there tables out there too?

Mariko: No tables, just benches. But people are out there all the time. Whenever I go there's somebody else out there too. I don't like it when there are too many tables, it's too cramped. Like there's too many tables but if there were a couple but mostly benches, it's just a more relaxing environment.

Jesse: Are we talking about spaces that would encourage relaxation and studying?

Rachael: A lot of our project is trying to maximize the use of space and that's our indirect connection to sustainability, that these spaces are in use most of the time so it's multipurposed. So it could be a good study space and accommodate those needs, but also be a good relaxing space where it's not so stuffy and you can relax there. Ideally it's used all the time, but practically we're still trying to figure out what works.

Jesse: That makes sense. I strongly encourage standing at times to study because to sit down for long periods of time is strenuous for your body so I don't know how you'd design that with some kind of high table that would be implemented alongside the actual sit down tables—standing desks. I understand that the drought makes us very careful about putting down grass here but I feel like if the lawn is in use for certain purposes and it's useful and beneficial, then why not? But if we can't get a lawn then I don't want cement, so I'd be okay with woodchips. They retain water so I like that aspect of it. There would be nice flowers you know they'd bring bees but a lot of things can be pollinated. (15:32)

Rachael: Will people study if there are bees?

Tyra: Yeah some people might be allergic to bees so that might be exclusive.

Mariko: I love the idea of multipurpose spaces. It goes along with the idea of the whole multipurpose facilities and buildings and urban areas to maximize space so it's a cool idea.

Rachael: Yeah spaces can be laid out very rigidly and be compartmentalized, but there seems to be a movement where we're trying to move away from that.

Slideshow—Pros and Cons

Leah: We have a slideshow to get your input about a couple of the ideas that we had to implement into our space.

Outdoor Classroom

Rachael: So let's try to write down some pros and cons on each of the ideas for our repurposed space project. When this happens next year, you can say you were part of its creation! So one of the biggest ideas we had was having an outdoor learning space. That's an experimental area that's going on right now in terms of bringing the classroom outdoors. These are just some pictures of some areas. Here is one: we wouldn't have an area totally structured because we're thinking it's going to be us doing some of the construction to save on funding and we want to use recycled material, so having actual structures is a liability issue. (18:25) But things like this where there's plants incorporated so like garden plots that are also benches... or that people can use as an amphitheater area, with a platform and some benches and some plants. My hope is that this could be something used officially by some classes. Like I don't know about the departments you're in, but in English our seminars are around 10 people, so that'd be a good fit and a good way to get people outside. I mean obviously it's not gonna work for a lab of like 100 people. But that'd be nice for some of the smaller discussion-based classes. That was one thought we had for the space. What are the pros and cons you had about having an outdoor classroom on campus?

Mariko: One of the cons of using it for official space for classes would be that other people couldn't use it because another class would be inside of it.

Jesse: So you'd have to manage a reservation system. Perhaps. Like the study rooms here. Like who would manage it? YRL? Facilities? Who would maintain it?

Marc: Also it might be vulnerable at night. Could be vandalized. Scratch something in the wood. But I did like how in all of the photos, the back of benches doubled to where the plants would thrive.

Jesse: Multipurpose!

Rachael: Would you guys like that if your professor—again, I don't know how big your classes are—but if your professors would set something up like that?

Mariko: One of my professors did that once. Our class was in Covell and we went out to one of the grassy areas beside Sunset Village and we did the last 20 minutes of class outside and everyone enjoyed it.

Jesse: Seems more stimulating to the mind.

Mariko: It was a nice day so yeah.

Rachael: It's so funny though because there's schools in North Carolina that are starting to do this now. And we're California... We should be the front of this movement. Make use of our sun, our constant good weather.

Marc: It doesn't rain often, yeah.

Tyra: Yeah this is the perfect place to make use of outdoor spaces.

Rachael: So pros are the multipurpose functions, having it be more stimulating, and making use of good weather in LA. And cons are conflicts, needing reservation systems, and being vulnerable to vandalization.

Jesse: I think you'll also need a backup indoor room in case that day the weather was particularly bad weather.

Mariko: Probably a little canopy.

Tyra: Wouldn't it be nice to be outside in the rain, like to be outside but not being rained on.

Vertical Garden

Rachael: Our next idea is having a vertical garden, or a living wall as it's sometimes called. Here are some pictures. So having planters, but vertical, would be more suited for our space which is all empty right now. There's also this one with lattices, which can be connected to the idea of the outdoor classroom since this one has benches with lattice walls.

Mariko: If we did this one we could have succulents. I like that idea, it's different than what the other outdoor areas have on campus and it looks nice.

Rachael: We don't know exactly what we'll grow there yet, because produce would be really cool in terms of a food justice movement but there are a lot of rules related to that. So it might be more educational, having native plants and succulents.

Jesse: Another feature that adds an educational component would be if on the planter there is information about the plant. And it could be a club, like Dig, because we have a garden on Sunset Rec managed by Dig and they would probably do that here. And because this space is so much more accessible, more people would be interested in learning how to garden. I don't know about cons. You said a lattice—what kind of plants would you be putting on that?

Rachael: I'm not so sure because I don't know a lot of plants either. You're probably the resident expert on plants here. If it was produce, tomatoes would be awesome to grow.

Jesse: Tomatoes are very fragile but it's possible. Especially for terraces you can grow up vines and casts almost create shade so it's like natural shade, which looks really nice.

Keara: I also feel like it'd be some kind of ivy, like a California one because those tend to grow very well vertically so it'd be something like that, if it was more feasible. And when she shows you our next idea of what we could put in the vertical garden. I mean even if it doesn't have educational, having sort of an ivy, would make the air a little fresher.

Tyra: The only concern—small concern—is that ivy tends to bring a lot of spiders. Yeah bug problems in general.

Mariko: Bugs are a big problem. For a lot of people if they don't go outside it's because they don't want to. Like one time I sat on the floor and all of a sudden just ants were crawling all over me and I had to move. I don't want to be there anymore if there are bugs crawling all over me.

Jesse: That requires a balance between bug populations while avoiding pesticides. Like I don't mind using pesticides but I think a majority of us are against it.

Monarch Restoration Garden

Rachael: Kind of related to that, is to have a monarch restoration garden. It's been happening all over California. People are trying to bring back the monarch butterfly so they've been planting milkweed. There's a lot of programs that will provide milkweed for free if you plant it because that's so good to bring back the monarch butterfly population and that could be something educational too with some signs.

Tyra: That looks nice.

Mariko: Yeah that looks nice. Looks a lot less work intensive than the vertical gardens.

Keara: I also think people would enjoy sitting in a space where there would potentially be butterflies flying around.

Collective agreement

Mariko: Everyone likes butterflies.

Jesse: Yeah if you don't you're evil.

Tyra: Butterflies yes, spiders no. Although spiders are good too.

Keara: Milkweed is also a really good pollinator.

Jesse: Aww nice. From what pictures you showed us they look aesthetically pleasing.

Rachael: The flowers, yeah. They change by color, but that's mostly what they look like. They're very beautiful.

Jesse: And education, yeah, that's another benefit. Like putting up signs that talk about the problems monarch butterflies are facing.

Rachael: Yeah, and it's in a way that's less formidable than bees I guess.

Tyra: Did you see we have that bee problem in the humanities building? There's a huge bee problem where you couldn't go through the exit on the second floor because you'd be swarmed by bees.

Rachael: Recently?

Mariko: Yeah, they had to get rid of them and also people have said there are a lot of dead bees in that area.

Meditation Space

Rachael: One of our other ideas is to have a meditation space.

Jesse: I think that's really important for colleges.

Mariko: Yeah I feel like we NEED a meditation space.

Rachael: have you guys engaged in any of the meditation programs we have on campus?

Jesse: I know they have a meditation space in Ackerman 3rd floor. I think it's weird the way it's just cornered in one area, so this would be nice because it's more outdoors. The one in Ackerman is indoors.

Keara: It's kind of a religious space, like most of the people that go there are praying so an outdoor meditation space where it's not necessarily made for praying but made for relaxation and calming. It could be for praying too, but I feel like the Ackermann space feels more for praying.

Jesse: It was in response to the people praying outside on the cement. So this meditation space could be for anything.

Mariko: I think it's good for students in general—the same teacher where we went outside for class would meditate at the beginning and end of class. Liz Marchant—she's in the gender studies program.

Jesse leaves

Mariko: We meditated at the beginning of every class and I think it's very calming for all the students and everyone's more prepared to learn. It's a seminar for 3 hours but then it doesn't feel like it. It really helps the environment so it's good for student learning.

Marc: Just having it as well would also bring awareness to students monitoring their mental health and their stress levels. Yeah, even if they don't use it, seeing people use it they'll be less afraid to acknowledge their mental status.

Mariko: Yeah mental awareness is super important.

Tyra: I'm not sure if you can use that space for multipurpose because if it's a meditation space, a lot of people would want to do yoga as well, which would be really, really cool to be able to do it outdoors and to have a set-aside space to do it outdoors.

Rachael: So you mentioned that a con would be that it be it harder to make it multipurpose if it was meditation and yoga?

Mariko: Yeah remember how you were saying earlier if we were having classes that go out there and there's a professor or TA is trying to teach a class then teaching might not be great for students trying to study or students trying to meditate. So that would necessitate more of the reservation system in place. But I think I like the idea of the meditation and study space more because there are like a lot of spaces where people can teach their classes outside like the sculpture garden and I don't think there are as many spaces that are made just for meditation.

Hammock Space

Rachael: Our last one then is an outdoor hammock space—this was actually a suggestion from the assistant to the chief sustainability officer on UCLA campus (Bonnie Bentzin) which makes me think this is a little bit more feasible because she's backing it, but we already have a lot of hammocks on Janss Steps. There's a little bit of complication with this idea since there would be a lot more maintenance—like would we bring them in and take them out every day, so they're not vandalized?

Mariko: People would steal them or something. Or maybe there could be a space where it could be rented, and people have their own too—or maybe you can keep 2 in the library and then they would come up with a system.

Rachael: That's actually what I was thinking of too! Like YRL already rents out so many things so they can do hammock rentals, because those Eno hammocks that most people use outside are so expensive.

Mariko: They would go with a study space or just like a quiet peaceful area. That would like work perfectly.

Rachael: So with the whole rental idea too that would be better because instead of installing stands, it would be like poles or something so people could bring their own. Do you think that'd work well with the other ideas?

Mariko: How big is this area? Because you could have different areas—it just depends on how big it is, like if you want to incorporate—how much you want to incorporate in the space.

Rachael: How many would sound good? It's kind of like double the size of this room. So in light of all the other ideas, how many would you think is a good number?

Mariko: Hammock wise? Like 2 or 3. Because that's the amount they have in Janss Steps anyway on any given day.

Tyra: And then right by that space there's a bunch of tables because it's right next to Northern Lights. So I feel like since there are a lot of tables and it's very cramped in that other space, a lot of people don't go there because it's not pretty to look at. So I like having a hammock or a having a space to meditate or do yoga right next to it, because that would just be cool to incorporate a quiet place to eat and study. And also, having that space, I would do yoga more if I had a space to do it like next to YRL. I would bring a mat. I agree with the pleasing to the eye thing. I won't study somewhere if it's ugly. Like I'd never study at this table, it's just not attractive. That's why I always study by Janss Steps because I like the view I like the scenery so it's like I actually it's a pretty big factor in choosing a space to go and study or to hang out.

Rachael: Yeah. This space is almost like half and half because on one end you're kind of behind the North Campus Student Center so it's a little ugly there, but behind the space there's these beautiful trees. So it's like if you face one way it's really awesome and if you face the other way you see the building and people eating pizzas and stuff. Yeah hopefully we'll make it more beautiful with the milkweed. There's probably not too many cons to the hammocks.

Mariko: Yeah, the only one I could think of is if we didn't go for the whole renting thing so if we keep them out there, somebody might steal them or vandalize or something.

Tyra: I definitely feel like it could be used because people do have them, and it would be an incentive to buy one. They could ask financial aid.

Rachael: Okay, that's about it those are all of our ideas so far. In light of that, do any of you have your own contributions?

Mariko: I was gonna say the garden thing but you guys have already written that.

Rachael: And the yoga thing is new so that's really cool. If you're interested in another professor who does meditation and stuff, David Shorter in World Arts and Culture is awesome and I think he has a meditation session every Wednesday.

[End]

E. WEBSITE BUSINESS CASE ANALYSIS

INTRODUCTION

UCLA has many rooms and spaces on campus that are underutilized or completely unused. This is due to the university's unconsolidated space scheduling systems as well as the information gap that leaves students unaware of the spaces available to them. Because UCLA's scheduling systems are so decentralized, it is unnecessarily difficult for faculty, staff, and campus organizations to understand what locations are available to reserve and how to go about reserving them. It is arduous to even measure how efficiently campus spaces are being used, since calendars that record this data are spread out across different systems. Additionally, due to the lack of accessible information, many campus spaces go unused by students who mainly inhabit the most popular locations on campus. This information gap creates the illusion of a lack of physical space on campus, whereas the problem truly lies in a lack of awareness. The 2016 Green Building Team's project goal is to maximize UCLA's space use, in order to minimize the energy wasted in vacant areas and better fill the campus community's space needs.

To do so, we propose a comprehensive, user-friendly webpage that compiles the areas available to students along with the useful information regarding each location. This will allow students to have better awareness of, and therefore access to, the available spaces on campus. In addition, we propose a single, university-wide scheduling system, CollegeNET's Series25®, to be used by staff, faculty, and campus organizations. The implementation of either alternative will minimize the amount of vacancies in spaces around campus, and ultimately mitigate energy waste and unnecessary future construction.

PROJECT DRIVERS

Project drivers are summarized as follows:

- Driver #1: Despite UCLA's many usable locations, students are unaware of the spaces available to them on campus to study, meet, dine, and relax.
- Driver #2: UCLA currently has over five inconsistent reservation systems that confuse and discourage students from reserving spaces on campus.
- Driver #3: Many rooms and locations around UCLA are being underutilized or are left completely vacant, which causes unnecessary energy waste.

EVALUATION OF ALTERNATIVES

3 project alternatives were considered:

- **Alternative #1: "Continuing Use of Current Scheduling Systems"**

Description:

The space reservation process at UCLA is currently too convoluted for students and organizations alike to use efficiently. Research about campus spaces reveals that spaces can be reserved for academics on campus, athletic events on campus, and gatherings in university housing (The Hill). Each of these reservation systems has online components, and the potential to be reworked in order to make the reservation process more streamlined for both students and organizations. Also, a more efficient reservation system will minimize energy usage and improve campus sustainability.

Events Online Reservation System:

The most extensive reservation system offered by UCLA is Events Online (EOL). This service, based in Kerckhoff Hall, uses a private network accessible by certain staff and administrators. Student organization signatories are provided an online application and the ability to list their event on the Campus Calendar and/or the UCLA Happenings website. It also allows students to “confirm venue reservations, assist the event organizer with following policies and procedures, and facilitate communication between campus units involved in coordinating events” (1). The EOL can be accessed by students in the Kerckhoff Events Office, where student organization signatories can reserve general assignment rooms and the Court of Sciences space.

Associated Students UCLA Reservation System:

Another extensive reservation system available to students is through the Associated Students UCLA (ASUCLA). Student organizations are able to make reservations for ASUCLA-specific spaces, such as rooms in Ackerman, Ackerman Grand Ballroom, Kerckhoff, Bruin Walk, and Bruin Plaza. Student groups also are entered into a room lottery process for weekly meeting spaces in Ackerman or Kerckhoff.

Departmental Reservation Systems:

Various departments and schools each have their own individual space reservation systems, including the Geffen School of Medicine, the Luskin School of Public Affairs, the Anderson School of Management, the Psychology Department, and the Chemistry Department. Each reservation process differs, and ranges from in-person requests at the department’s main office to online reservation systems. For example, the Luskin School of Public Affairs reservation process is limited to students within a department housed in that school, such as the Public Affairs Minor. The student must speak directly with their department’s staff in order to view the room reservation calendar and reserve a space. Only graduate students, staff, and faculty with Luskin email addresses have access to the actual reservation system.

Library Reservation Systems:

The libraries at UCLA also have reservation systems for their group study spaces. Powell Library has a Powell Group Study system on the UCLA Library website, named CLICC, that allows any person with a BruinCard to make room reservations with a three hour maximum. The Young Research Library (YRL) has a separate room reservation system for group study rooms and for collaboration pods, but it is located on the same UCLA Library website.

UCLA Recreation Space Request System:

Signatories of UCLA student organizations also have the ability to reserve spaces for athletic events. Through the UCLA Recreation’s Space Request System, students can reserve spaces in

the Aquatic Center, Drake Stadium, Intramural Fields, Kinross Recreation Center, Los Angeles Tennis Center, John Wooden Center, Pauley Pavilion, Sunset Canyon Recreation Center, Sycamore Recreation Center, and the Student Activities Center (SAC).

UCLA Reservation Life:

Lastly, students can reserve spaces located on The Hill, or in university housing facilities, using the UCLA Reservation Life website, which has a reservation system for rooms in Rieber Study Rooms, Hedrick Movement Studio, and De Neve Meeting Rooms. Alternatively, The Hill also has student spaces that do not require reservations: Hedrick and Rieber Fireside Lounges, Hedrick and Rieber Music Rooms, Covell 227, and Sproul Landing Living Room.

- **Alternative #2: “Creating Comprehensive Web Interface for Students”**

Description:

A new webpage would be able to incorporate all of the features we believe to be important. Our target audience is UCLA students and the purpose of our webpage is to inform the students of the campus areas available to them. The *UCLA Spaces* webpage would be located on the public ucla.edu domain. This domain is one that students use frequently, since every class and academic-related event that is hosted by the university can be found here. Therefore, every student is familiar with, and has access to this domain, which increases the likelihood of students visiting our webpage.

UCLA Library Locations Webpage as a Model:

The general layout that we envision is similar to that of the existing UCLA Library Locations webpage (<https://www.library.ucla.edu/locations>), developed by Casey Grzecka and Elaine Blakeman. However, we would alter some specific characteristics. First, the library website is exclusive to libraries. We propose the creation of a similar website that would incorporate more campus buildings because UCLA has many buildings, besides the library, that are useful for meetings, studying, relaxing, and the like. The library website has very specific amenities such as “headphones” and “video kits.” However, the website our team envisions will cover only the general amenities that could potentially apply to all locations. This would decrease the clutter on the webpage, and keep the page simple and easy to navigate. Finally, the most significant would be to provide access to all of the information on a single webpage, helping to minimize confusion. For example, to reserve the Inquiry Labs in Powell Library, the user has to make three more “clicks” from the Locations page to get to the information regarding reservations. Those three “clicks” are three opportunities for the user to become lost and to ultimately not locate the desired reservation link. By limiting all of the information we wish to provide to one page, everything would be compact and consolidated. We are currently in the process of discussing collaboration with Grzecka and Blakeman. Additionally, Kate Halkett, the Senior Director of UCLA Marketing, who sanctions the addition of new webpages to the UCLA website, has been assisting us to progress our plans after expressing her interest in our website.

Proposed UCLA Available Spaces Website:

On the left-hand side of the layout, we envision tabs of general locations as well as boxes to check and uncheck the different amenities that students might seek in a space. These tabs and checkboxes are used to filter the specific space search. Examples of tab titles would include

“Outdoor Space,” “Indoor Space,” “North Campus,” “South Campus,” “Dining,” and “Recreation.” Examples of amenities could include “quiet space,” “computers,” “whiteboards,” and “printer.” Once filtered, the search results that are displayed would each have a concise, qualitative description of the space, the hours of operation, the amenities available, a photo of the location, and a link to reserve a room, if applicable. The reservation link would connect to one of the many reservation programs already in place at UCLA, as displayed in the *Existing Reservation Systems* section of this business case analysis. By providing links to locations that can be reserved around campus, the different reservation systems would be centralized in one place, and the user would have direct access and instructions to continue the reservation process.

Consideration of Free Website Builder:

Instead of working with campus web developers like Grzecka and Blakeman, an alternative approach would be to use a free website builder, such as Squarespace. Squarespace is extremely user-friendly, and the five team members could create and maintain the website without external assistance. Additionally, taking up all of the responsibility of producing this website, this project would be completed in a much shorter timeframe, as the time lost to miscommunications or waiting for email responses would be eliminated. Despite the benefits of using Squarespace, hiring a web developer would be a better alternative for three reasons. First, Squarespace only offers simple template layouts, none of which are appropriate for the type of website we have in mind. Secondly, since the target audience is the UCLA community, the domain of the website should be ucla.edu. The free versions of website builders only offer their company domain, which would be inappropriate to post on the UCLA website. Finally, the search filter would require checking and unchecking boxes, which is too advanced for the templates of free Squarespace websites. Instead, the cost of implementing this feature and maintaining the website would cost a minimum of eight dollars per month. When comparing a Squarespace website with the significantly higher quality and more flexible website that would be produced by collaborating with a developer, Squarespace’s monthly payment simply does not seem worth it. Creating a website using Squarespace would have many short-term, including low cost and a short timeframe. However, a professionally developed website would have significantly higher quality, be able to include all of the features we envision, and be more user-friendly, making it the better choice in the long term.

- **Alternative #3: “Implementing CollegeNet’s Series25® Across Campus Systems”**

Description:

Another alternative to maintaining UCLA’s existing reservation systems would be the implementation of American web developer CollegeNET’s web-based scheduling program, Series25®, which offers a set of tools for optimizing classroom and event scheduling, space and resource management, and centralized calendar publishing. Over 1,000 universities use this program across the United States, ranging from local community colleges to large public universities and Ivy League schools. Series25 can help consolidate the currently decentralized systems used by UCLA for space scheduling matters.

There are two components of Series25 that offer distinct functions to aid in schedule optimization: 1) the Schedule25® Automated Bulk Course Scheduling program, and 2) the 25Live® Web-based Event Scheduling, Publishing, and E-Commerce program. The first

component, Schedule25, allows for efficient scheduling of an entire term of classes. It optimizes classroom allocation based on the room attributes, faculty preferences, and other considered factors. Space efficiency is built into the system, as Schedule25 automatically figures out optimal room placements based on specified features inputted into the program, such as departmental preferences and requested times. Furthermore, Schedule25 allows for increased adaptability through creation of alternative schedules in cases of disaster recovery, space remodeling, and other situations that need planning. The second component, 25Live, allows users to view and schedule any event, location, and resource using Internet access. It is fully hosted by CollegeNET's secure servers, which substantially cuts down on the amount of software to install and maintain. 25Live enables event planners and academic schedulers to use the same customizable program for scheduling.

The customizable features of 25Live allow universities to decide who is able to access various scheduling systems. Most campuses only allow faculty and registered student groups to create accounts for using the scheduling system. Stanford University, for example, mainly uses the program for official events planning. However, individual students could still access Series25 to view the scheduling systems, but would not be able to reserve spaces. At George Mason University, although the system allows only faculty, staff, and registered student organizations to search for and request campus spaces and resources, the centralized schedules are viewable by all parties on the 25Live website, so any visitors are still able to gain knowledge of what spaces are available and what events are taking place.

Relevant Features and University Case Studies:

CollegeNET's event management system 25Live would be able to merge UCLA's existing scheduling systems, which would help to simplify the reservation process and thereby optimize the way space is used on campus. One case study that exemplifies how 25Live can centralize event and classroom schedules occurs at George Mason University (GMU) in Arlington, Virginia. GMU is a school of nearly 34,000 undergraduate students that is spread out across different campuses and instructional sites. GMU replaced its previously disorganized calendaring system with 25Live, which streamlined the entire scheduling process and allowed each department to tailor their calendars to their needs. Departments and university administrators became able to view schedules throughout the entire university on one central calendar.

25Live also offers further potential for sustainable practices. Beyond a centralizing mechanism for space reservation, the system interface could connect facilities with existing scheduling systems in order to save energy output and costs. For example, Lane Community College (LCC) in Eugene, Oregon used 25Live in an innovative way, by combining event and lighting scheduling into one process. The campus' IT Systems Director worked with a contractor, Musco Lighting, to allow lighting to be scheduled directly through 25Live. The updated system now includes a choice of three lighting sources (soccer field, track infield, and whole track) plus three time options (sunset, sunrise, or event time). Event schedulers can book all of their facilities and lighting needs together, which saves time during the reservation process. Lighting schedules entered into 25Live are automatically sent to the Musco interface every hour. By linking the 25Live scheduling system to energy providers, LCC conserved energy that otherwise would have been wasted due to a lack of communication between the scheduling system and energy outputters. This conservation of energy is not only sustainable, but also cost-

friendly once the proper systems are put into place. LCC is now also working to hook up its heating and cooling to this automated system.

Additionally, Schedule25 could be used to identify future space needs caused by factors such as construction, which is timely in the context of the agreement by Governor Jerry Brown and UC President Janet Napolitano to add 10,000 undergraduate students to the UC system. Eastern Michigan University (EMU), a college in Ypsilanti, Michigan with nearly 23,000 students, serves as a relevant case study for the issue of identifying space needs. When two of EMU's buildings, responsible for 40% of classrooms, were out of commission due to construction, an ad-hoc committee got together to identify all non-classroom space—the student center, library rooms, and other usable spaces throughout campus—that could be repurposed during construction. After those spaces were entered as temporary classrooms into the database, Schedule25 was able to place all courses—a total of 3,600 active sections—without using classrooms in either of the two buildings and without running into any scheduling conflicts. The results of Schedule25 modeling showed that with efficient automated scheduling and the use of temporary swing space, classes could be held during construction without interruption.

Challenges and Drawbacks:

The most significant challenge of adopting Series25 as UCLA's main scheduling system is its lengthy implementation process, which consists of 8 core positions and 11 phases. CollegeNET provides an implementation checklist as well as its own support team to help carry out implementation upon the university's subscription to the program. The 8 core positions typically consist of:

- Executive, in charge of pushing initiatives and securing funding;
- Project Manager, authorized to make implementation decisions based on campus policies;
- Functional Administrator who understands users' scheduling needs and can administer software accordingly;
- SIS Coordinator who can help synchronize scheduling data;
- Key Academic and Non-Academic Schedulers who learn Series25 policies and practices;
- Key Event Service Providers who understand current event scheduling process;
- Network Administrator who can install the interface;
- Web Administrator/Developer who can install and customize web software.

However, these positions are often consolidated into fewer positions, as ones such as the Executive and Project Manager are in charge of overlapping tasks. At other universities such as Stanford University and Cornell University, the implementation project was taken up and headed solely by the campus' Space Planning committees.

Phases of Implementation:

1. A beginning training component wherein the core implementation team is familiarized with Series25;
2. Software installation;
3. Data preparation;
4. Addition of users and security groups;
5. Policy set-up;
6. Specialized Series25 training that will lead to user training;
7. More detailed policy set-up, such as notifications;
8. Final implementation wherein system goes live.

Conclusion:

Centralization of campus reservation systems is an instrumental step toward first properly assessing the way that campus space is utilized, and then based off of those findings, improving the efficiency of space use. Although the implementation process is lengthy and requires heavy commitment from the selected implementation team, once the system is put into place, the efficiency brought about by Series25 has long-lasting, widespread benefits applicable not only to space use, but also possibly to energy use and future planning. Therefore, in the case that UCLA seeks an official program to boost accessibility and use of campus spaces, we recommend that Series25 be taken up and implemented by the UCLA Space Planning Committee, or any other relevant organization.

RECOMMENDATION

Alternative #2: “Creating Comprehensive Web Interface for Students” is the preferred alternative.

The UCLA Available Space web interface is the preferred alternative for maximizing space use on campus for two main reasons:

- 1) It is most widely accessible, by individual students as well as official UCLA organizations.
- 2) It requires a relatively simple implementation process.

First, compared to UCLA’s existing reservation systems and the alternative of CollegeNET’s Series25 system, the UCLA Available Space website would be available to the UCLA general student body in addition to authorized users of UCLA’s reservation systems such as faculty, staff, and signatories of student organizations. The UCLA Available Space website would function as a database for existing spaces on campus rather than an official reservation interface, so there are no issues with making the website publically accessible to all students.

Used in this way, the website would most benefit the populations of first-year and transfer students who are unfamiliar with the various study areas, lounges, group meeting rooms, and other resources on UCLA campus. However, official groups seeking to reserve campus spaces could still use the website to locate spaces that suit their specific needs before referring to the appropriate reservation system to officially book a space.

Second, because the Library Locations webpage already exists as a model, implementing the UCLA Available Space website would be efficient yet immensely beneficial for the UCLA community. The current reservation systems lack a comprehensive database that informs students of all available campus spaces, while CollegeNET's Series25 has a lengthy implementation process even though it offers centralization of space information. We propose that we use the same programming model as the Library Locations webpage because it has proven to be a user-friendly interface that promotes knowledge of campus resources. Also, we would not have to bring in external programmers to expand it to incorporate all campus spaces since the web developers who created the Library Locations page work at UCLA. Therefore, by employing an existing model for a resource information interface, we hope to make the creation and maintenance process for a UCLA Available Space website efficient and timely.

The current space accessibility systems at UCLA are unacceptable because they are too decentralized for efficient use and are inaccessible by the general population. The alternative of CollegeNET's Series25 addresses these issues of efficiency and accessibility, but comes with the cost of a time-consuming implementation process. The creation of a UCLA Available Space web interface would fulfill the necessary task of consolidating space information for the UCLA community, while remaining widely accessible and allowing for easy maintenance.

F. OUTDOOR SPACE PRINCIPLES

Outdoor student spaces on campus should:

I. Allow for large group interaction, but also be sub-divisible into spaces scaled for individuals.

- A mix of 4' and 3' wide benches with armrests and short tables.
- Individual adirondack chairs.
- Hammock posts, which could be equipped with hammocks rented from the YRL.

II. Be accessible, in terms of both available knowledge about and physical accommodations in the spaces.

- Inclusion on the UCLA campus map.
- Disability-friendly accommodations.
- Weatherproofing furnishing, such as an overhead canopy.

III. Incorporate natural elements that promote sustainability and mental health.

- Planters reclaimed from recycled shipping pallets.
- California native plants.
- Milkweed to facilitate monarch conservation.
- Birdhouses and birdbaths to encourage multi-species habitation.
- Educational signage to explain significance of native flora and fauna restoration.
- A platform for meditation and outdoor yoga activities.