

# Campus Collaboration for Experiential Learning in Sustainability Education: LEED Lab

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Sustainable construction continues to be critical in the marketplace, especially for new professionals. As such, undergraduate and graduate education will best serve students by providing them with experiential education opportunities in sustainable construction methodologies and management. This paper documents a roadmap to success, and analyzes the development of a new methodology in experiential learning for sustainability construction curriculum. It is LEED Lab. In 2013, Colorado State University-Pueblo became one of four universities across the nation to develop and offer LEED Lab. LEED Lab is hosted in Colorado State University-Pueblo's department of Construction Management (CM) and Civil Engineering Technology and is the first to host the course outside of a school of architecture or management. LEED Lab has been supported by an on campus federal STEM grant, and received collaborative resources from the U.S. Green Building Council (USGBC) and Green Building Certification Institute (GBCI). The course enables students to gain hands on experience pursuing LEED certification of an existing campus building, or facility, and prepares them to sit for the LEED Green Associate (GA) and LEED Accredited Professional (AP) accreditation exams upon successful completion of the course. Because LEED Lab uses existing buildings and facilities, the opportunity to duplicate the program on other campuses in construction management programs is accessible. This article describes the process of creating a LEED Lab, with a LEED Lab roadmap, identifies stakeholders on campus to engage, and outlines the curriculum and specifics of the LEED certification process for the selected campus building and course offering.

**Keywords:** Experiential Learning, Sustainability, LEED, Green Building, Higher Education

## Introduction

Experiential knowledge of sustainability and green building practices is increasingly important in the construction industry. Direct practice and work-integrated learning are effective pedagogies as well as transferring technical knowledge and soft skills to young professionals resulting in enhanced employability in the construction industry. (Mah, Arain, Sharma, 2014). Seventy one percent of hiring decision makers maintain that being LEED credentialed increases competitiveness (USGBC, n.d.), thus generating an additional \$12.5 billion in GDP, supporting the addition of 230,000 jobs, and providing \$10.7 billion in labor earnings (USGBC, n.d.). Since the construction market accounts for 5.5% of the \$14.7 trillion U.S. GDP, including all commercial, residential, industrial and infrastructure construction, (US Department of Commerce, 2011) there is a high demand for knowledgeable and experienced construction management student graduates with green building field experience and a background in sustainability.

Green building rating systems such as LEED®, BREEAM, Living Building Challenge™ and Green Globes are all recognized nationally and internationally as substantial systems for measuring success. In their initial stages, they are predominantly understood, promoted and executed by the designers of a project. Integrating sustainability into construction management (CM) higher education programs has presented curricular challenges in recent years. This deficit has been causing a lack of knowledge about green building research and practice among the graduates of CM and similar disciplines (Doucot, 2012). By 2015, an estimated 40-48% of new non-residential construction by value will be green, equating to a \$120-145 billion opportunity (McGraw Hill Construction, 2010), and growing to 55% by 2016 (McGraw Hill Construction, 2013). It is important that Construction Management students be prepared to apply knowledge and skill sets in green building upon graduation.

While LEED is not a required green building standard, it is nationally recognized as the most common green building standard that offers value for both projects and professionals. LEED is referenced in project specifications for 71% of projects valued at \$50 million and over (McGraw Hill Construction, 2010). Furthermore, in 2010, the General Services Administration (GSA) moved to require that all new construction and substantial renovation projects be certified LEED Gold at a minimum (Beatty, 2010). Various LEED initiatives including legislation, executive orders, resolutions, ordinances, policies, and incentives are found in 45 states, including 206 localities (142 cities, 36 counties, and 28 towns), 34 state governments, 14 federal agencies or departments, 17 public school jurisdictions and 41 institutions of higher education across the United States (USGBC, n.d.). More times than not, public and private sector building owners across the country are pursuing LEED certification for sustainable and green building construction projects. As of the most recent report, more than 3.3 billion square feet of building space are LEED-certified (USGBC, 2014).

LEED Lab is an interdisciplinary course where students pursue LEED certification for an existing campus building or facility. LEED Lab is a conduit for the needs of the green building industry and campus communities. It brings together students, faculty, staff, administration, and facility personnel in a collaborative learning environment that teaches students sustainable building practices. The classroom time is spent covering materials that will prepare the students to support green design and construction operations. Additionally, with the collaboration of the U.S. Green Building Council (USGBC) and Green Building Certification Institute (GBCI), students attain real professional experience submitting documentation for LEED credits that apply towards the LEED certification of a selected campus building or facility.

## **Background**

LEED Lab is a higher education class offered for credit in which students learn about green building and sustainability while working on LEED certification for a campus building. The course was made possible through the collaboration of Colorado State University-Pueblo students, faculty, campus administration, the USGBC and the Center for Green Schools. In 2014, Colorado State University-Pueblo was only 1 of 4 higher education institutions to offer LEED Lab. Since that time, 3 other higher education institutions have committed to offering the LEED Lab but Colorado State University-Pueblo continues to be the only school that offers LEED Lab as part of their Construction Management degree program.

Colorado State University-Pueblo has made great strides towards integrating sustainability education on campus and across multiple degree disciplines. In 2013, a Sustainability Minor was approved, which draws from a number of disciplines and colleges across campus with endorsed classes. The department of Construction Management has also made organized and concerted efforts to weave sustainability topics into its classrooms. Classes such as introduction to materials and methods, and concrete and asphalt materials have introduced individual modules on sustainability. LEED Lab provides the opportunity to go more in depth with sustainable construction and green building classroom material while providing real world experience, thus promoting innovative learning and campus-wide sustainability initiatives.

Initially, LEED Lab was delivered as a special topics course in the spring semester of 2014. The course consisted of eight students; three Construction Management majors, three Civil Engineering Technology majors, one Engineering major and an MBA student. The instructors were a faculty member from the Construction Management department and the campus Sustainability Education Specialist (SES). The course ran 16 weeks, a full semester, and consisted of two hours of lecture and two hours of lab resulting in three credit hours to be earned by enrolled students who passed.

Selection of a facility for LEED certification was a decision collectively made by the faculty and staff, before the start of the semester. Colorado State University-Pueblo is home to a certified LEED Platinum New Construction (LEED NC) building: the Library Academic Resources Center (LARC). This was the first government-funded building in the state of Colorado to reach a LEED platinum rating, the highest LEED certification to be achieved. As the library and academic resource building on campus, it is a high profile building bringing notoriety to it not just through the LEED certification process, but also as a building that is utilized by every stakeholder on campus. This building, LARC, was selected as the certification project for LEED Lab.

LEED Existing Building Operations and Maintenance (EBOM), a LEED certification rating that demonstrates ongoing green building efforts through campus operations and maintenance of the building, was selected for certification of the LARC building. Since LEED certification requires a great deal of documentation to receive credits, much of the required documentation was created at the time of the LEED New Construction (NC) Platinum certification process, providing both reference material and congruencies for LEED EBOM certification of LARC for the LEED Lab.

The in class lectures focused on material from the LEED EBOM (Existing Building Operations and Maintenance) v2009 Reference Guide threading in applicable credential knowledge from both LEED Green Associate (LEED GA) and LEED Accredited Professional (LEED AP) study guides. Supplementary materials were also selected by faculty and delivered via the University's Learning Management System, Blackboard. These included videos, topic related readings, online webinars, credit-specific reference materials, quizzes, assignments and tests. An important part of LEED Lab is the experiential component. By pursuing certification for an on campus building and assigning specific credits to each student, they were given the pre-professional exposure that is often lacking in traditional courses.

The syllabus, assigned readings and classroom lectures, broke introductory sustainability material and LEED certification topics into sixteen-week modules. All students were exposed to credits and prerequisites in Sustainable Sites, Water Efficiency, Energy and Atmosphere, Material and Resources, Indoor Environmental Quality, Innovations in Operations and Regional Priority Credits. The primary resource for studying these credits was the LEED EBOM reference guide v2009. Individual students were assigned unique credits to study, provide documentation and present before the class. While the EBOM reference guide and study guides served as the classroom materials, the USGBC and GBCI consulted with faculty to provide a timing chart for credits to be completed through the LEED Lab project certification process.

## **Methodology**

Through the process of planning for LEED Lab, curriculum development, engagement of stakeholders, identification of resources, and fiscal commitments on behalf of the University, were all part of creating a successful LEED Lab and corresponding roadmap. Additionally, pertinent goals and priorities were mapped to track the planning efforts for the lab. The following is a detailed roadmap of the tasks taken by Colorado State University-Pueblo to develop and offer the LEED Lab on campus. Other higher education institutions and programs may replicate the establishment of a LEED Lab on their campus using this roadmap.

### *Engaging Your Campus*

A substantial first step to developing a LEED Lab course offering was to survey various interests from faculty, to faculty, to administration and students. These interests defined who would be engaged in LEED Lab. Once

interested parties were identified, it was essential to meet collectively and regularly to map out tasks related to stakeholder involvement, curriculum development, resources and support, and building selection for the LEED certification process. Initial tasks included identifying terms of the course offering, such as credit hours to be earned, accreditation for colleges, and development of outreach and communication to announce the course offering.

Colorado State University-Pueblo's academic and curriculum system requires that new course offerings begin as "special topics" course and can be housed under any department and/or major. Additionally, new course offerings that are offered as a "special topics" course can only be offered two successive semesters before the new course is required to become a formal course offering or no longer offered. LEED Lab was offered as a special topics course for both the Spring 2014 and Spring 2015 semesters. In fall 2014, the course was formally submitted to the University CAP (Curriculum and Academic Programs) Board to be reviewed, and subsequently approved, as a formal university course offering for credit.

Although, LEED Lab is an interdisciplinary course and is suitable for all undergraduate and graduate students, hosting this course within a department or college will be subjective to each higher education institution and their degree programs. Accreditation was also determined by the hosting degree program, and should be noted that LEED Lab is a combination lecture and lab course that requires significant student independent research and synthesis of knowledge about sustainability. Therefore, LEED Lab was deemed suitable for earning a minimum of three credit hours.

Selection of the LEED version for certification of the identified building came at a later time in the LEED Lab course development process, but was initially discussed at the onset of this collective effort. Research of available documentation for the selected building certification played a significant role in choosing the LEED certification version. As a lesson learned by Colorado State University-Pueblo, it is cautioned that in teaching LEED Lab, students will benefit from the most current LEED certification version as they will not only learn that version in class, and through experiential credit analysis of the building, they will be practicing the latest LEED version which will inevitably prepare them to sit for the LEED GA or LEED AP exams.

Following engagement of stakeholders, and the accepted proposal of the LEED Lab course, Colorado State University-Pueblo established an outreach and communication methodology to announce the initial course offering of LEED Lab. The outreach included visitation by the campus Sustainability Education Specialist (SES) to various STEM focused classrooms where the course was discussed as an opportunity for students to not only receive credits towards their degree program but to also gain experience towards earning a professional accreditation that would serve to catapult them in the job marketplace post graduation. Additionally the faculty member promoted the class within the Construction Management and Civil Engineering Technology programs.

### *Developing Curriculum*

In 2013, when CSU-Pueblo wanted to offer LEED Lab for the following Spring 2014 semester, curriculum for a LEED Lab course did not exist. Therefore, development of the LEED Lab curriculum was the next critical step in the roadmap, and continues to be a critical step for other higher educational institutions who want to offer LEED Lab as well. Curriculum will vary at each higher education institution but it is anticipated that general educational approaches and similar tools can be used at any participating campus.

At Colorado State University-Pueblo, development of a curriculum involved authorship of a syllabus for review by the degree program hosting the course and then full vetting of the curriculum for the 16-week semester. Curriculum was focused on the LEED certification version that would be used for the building in LEED Lab and then supplemented with learning materials and resources targeted at specific areas for educational enhancement. In addition to the LEED reference guide as the textbook for the course, the curriculum also used a combination of online learning sources, supplemental journals, and articles. Other useful materials for the students were the LEED Green Associate and LEED AP candidate study guides. The curriculum for the course was developed with the core concepts of LEED in mind. A timing chart was authored by GBCI, and shared by USGBC, for a suggested approach to certification credits for the LEED Lab.

### *Stakeholder Involvement*

Across all higher education campuses, there are multiple stakeholders involved in curriculum development and campus operations. These can range from administration, staff, facilities, students and more, but will be different on each higher education campus. In a unique, but progressive effort, LEED Lab is a place where both curriculum development and campus operations come together. Upon initial establishment of LEED Lab, identification of stakeholders who will play a direct or indirect role is a necessary first step. Generally, these stakeholders are students, faculty, staff, administration, USGBC and GBCI. Each group of stakeholders approach LEED Lab based on their interests and goals.

Faculty members act as teacher, mentor and project manager through the LEED certification process and they will help manage the credits being addressed. Their oversight in the LEED certification process is critical to the success of LEED Lab, and ultimately project certification. Within the curriculum, the faculty teach systematic processes and inter-systematic thinking, including life-cycle cost analysis, sustainable building techniques, economic awareness, and social responsibility. Faculty efforts within LEED Lab result in driving campus-wide sustainability efforts. As mentors, faculty encourage students to achieve professional accreditation for either the LEED GA and/or LEED AP. Student learning outcomes can be directed for successful completion of these exams.

Faculty will also need to act as the main point of contact, coordination and communication amongst all other involved stakeholders. They will take on the role of project manager for the LEED certification of the project selected for LEED Lab. Faculty will need to coordinate with administration on an assigned or allowed budget for LEED Lab, which should include registration of the LEED project, certification review through GBCI, and any resources for teaching the class, such as a current LEED reference guide. Faculty will also need to establish access to data for credit completion of the LEED project. Inevitably this means faculty should be well versed in online cloud data storage files, such as an on-campus intranet, e-learning software programs, Google share drive, or Dropbox. These allow for shared access, thus enabling faculty to share data collected and store in folders where they can assign access to the students in LEED Lab. During the planning process for LEED Lab, a critical approach to success is to have faculty search out as much initial data from campus facility personnel as is available. While students in LEED Lab can conduct a 'gap analysis' on credits to determine the need for data, it is easier to have as much credit-related data as possible at the onset.

Involvement of campus facility personnel in LEED Lab is necessary to achieving many credits in the LEED certification process, and should begin at the onset of LEED Lab; or even before at the time of planning the course. Facility personnel are generally the home for any and all building and operations data related to campus. Dialogue between facility personnel and campus departments are not always successful. It can be difficult to begin conversations since educational departments do not generally engage with facility personnel or operations. However, success in achieving LEED certification through LEED Lab requires ongoing and open communication with facility personnel. Conducting initial conversations between campus faculty who will be teaching LEED Lab and facility personnel should focus on defining the needs of LEED Lab and demonstrating the benefits to all involved stakeholders.

Faculty and students will require data gathering related to campus energy consumption, waste diversion, water conservation, and more. As part of their credit analysis and completion, it is expected that students will need to reach directly to facility personnel to gather data related to the specific credits they are researching. Direct student engagement with facility personnel results in real world experience for students as they begin to analyze data, such as monthly utility bills and understand how facility personnel track this data for campus operations. For facility personnel, LEED Lab can offer many benefits, such as assisting with deferred costs and campus building certifications; application of best practices and management through LEED; ongoing measurement of facility operations, and resource optimization both within the building and for facility staff. Jointly, a successful working partnership can be established between facility personnel, students and LEED Lab faculty over time providing a much-needed benefit to the campus community.

The USGBC's Center for Green Schools created LEED Lab, and a direct stakeholder. The Center supports all higher education campuses who develop a LEED Lab through direct assistance to leadership, capital planning departments and facilities staff on how to develop, implement, operate and maintain a green campus. Their staff demonstrate how the LEED green building rating systems can be utilized as a tool for green planning and implementation while supporting student leadership and green building advocacy efforts campus-wide. The Center

is driven by encouraging the incorporation of sustainability concepts into relevant course curricula, research initiatives and community partnerships for higher education campuses offering an invaluable resource.

Traditionally, GBCI provides rigorous third-party review process for all LEED certification projects. Their involvement in a LEED certified project offers compelling proof to the construction personnel, clients, peers and the public at large that the LEED certified project has achieved set environmental goals and the building is performing as designed. In LEED Lab, GBCI acts as a project advisor and coach while still maintaining their role as the third-party reviewer for LEED credits to meet certification ratings. Personnel from GBCI are assigned to LEED Lab faculty and students from the onset of the course and project. In this role, GBCI not only is a direct technical resource on LEED credits, they are also coaches on the best process, methodology and approach for the certification of a project within LEED Lab. GBCI is a necessary resource for students and faculty as they pursue LEED credits.

### *Resources and Considerations*

Following the spring semester of LEED Lab, over the summer students continued working on the LEED EBOM certification that was originally in version 2009 and transferred to Version 4. Although, the students could continue to pursue the v2009 project, an ostensibly simpler rating system, future LEED Lab classes will pursue LEED OM certification in v4. This will be done so the students will have experience relevant to the most up to date rating system. It is the opinion of the authors that future LEED Labs should always adopt the most up to date version for certification purposes even, if an earlier simpler version is available.

While the change from v2009 to v4 has been challenging from a certification side, it has also changed the accreditation side, perhaps for the better. To sit for the LEED Accredited Professional exam in v2009, an individual must have shown that they had experience on a registered project. Colorado State University-Pueblo's LEED Lab project was a registered project and therefore the students could sit for the LEED AP exam in v2009. LEED v4 has removed the requirement that an individual must have worked on a registered project, but has developed questions to test for project experience making this the metric for project experience.

The timing chart serves as the true guide or checklist towards project certification in LEED Lab. In each credit category there are prerequisites and credits. Prerequisites are mandatory project requirements that ensure minimum levels of achievement within a category. Prerequisites in other words are credits that must be attained. Further there are establishment credits and performance credits. Establishment credits focus on building assets, policies and plans. Performance credits are ongoing, require tracking, auditing and testing. The universities sustainability education specialist, the USGBC's director of higher education, and a GBCI LEED certification reviewer collaborated to create a timing chart. The timing chart was used to review credits previously achieved in the LEED New Construction Certification on Colorado State University-Pueblo's campus and find synergies for the Operations and Maintenance certification. The LEED timing chart is a tool that could be customized for future LEED Lab courses.

LEEDuser is an online resource for any project participant working towards the certification of a LEED project. The online resource offers the ability to research LEED credit requirements in any rating. For students, LEEDuser was a significant resource that provided clarification on LEED credits. It served as a research portal for credits being completed by students as part of LEED Lab, while providing LEED specific resources such as LEED credit templates, checklists, sample documentation and forums for discussion on each LEED credit and corresponding rating system. Students in LEED Lab were encouraged to establish a user account at the onset of the semester.

### **Outcomes, Results and Participant Feedback**

After just one semester, LEED Lab has had a number of strong outcomes demonstrating improvement of teaching construction in the classroom. Notable results are development of an interdisciplinary course for campus curriculum, students obtaining LEED professional credentials; reduced LEED costs for campus projects; enhanced academic experience through the use of multimedia in the classroom and hands on work experience, and facilitated campus stakeholder engagement.

Participating in LEED Lab students go into the field with practical experience having worked on actual LEED certification of a registered building or facility. Students collected energy data, material and systems information and documentation and prepared credit information for final submission to the GBCI. Universities benefit from the work on campus wide policies develop by students in LEED Lab. This will result in operational savings as well as help meet other credit requirements in future LEED projects the University undertakes. The course uses experiential education to reinforce sustainability topics and leaves students well versed in LEED which is the most widely adopted certification program nationally and internationally. The lab also prepares students with the background and knowledge that is pivotal to passing the LEED GA and AP exams. The course is repeatable and can be duplicated, because it uses existing buildings and facilities as the laboratory for class through LEED OM certification.

While focused on green building and sustainability initiatives, LEED Lab offered a true interdisciplinary course allowing for the enrollment of any student major on campus. Interdisciplinary courses are becoming more common in higher education, but very few have longevity and demonstrate success. A paper presented at the 48th Annual ASC International Conference by Roger Williams University commented on the “perception that the principles of green building only relate to certain academic disciplines” (Doucot, 2012).

In order to surmount another challenge, LEED Lab integrates multimedia into the classroom thus providing for enhanced student engagement. A significant majority of enrolled students in higher education today have a birth date of 1980 or later, thus identifying them as ‘digital natives’. Digital natives are the children who have grown up into a world surrounded by and using computers, video games, digital music players, video cams, cell phones, and all the other modern technological toys and tools (Kivunja, 2014). Students used multimedia, such as webinars, videos, LEEDuser accounts. They conducted surveys using tablets, I-pads and google docs. Utilization of multimedia further engaged these students while bringing current information technology and communication into the construction classroom.

The students in LEED Lab found the material and format engaging. When asked what works well one student responded “Being able to work with each other and collaborate on achieving credits was a very cool opportunity.” Although it may be difficult to duplicate in the future another student commented that “the teacher student ratio was great, because we were able to achieve the results that we needed working together in a tight knit group...” Another student liked the online quizzes and felt it encouraged students to read and review material. Overall, the students enjoyed the classroom, laboratory and hands on experience. Suggestions for how to improve the class include spending more time lecturing on the certification process, LEED templates and how to more efficiently use LEED User and LEED Online. Another suggested implementing more lab work with credit templates in class or online. Another comment was that there was also a lot of material to cover, which seem consistent with other such LEED programs. Overall the students benefited in class and thrived in the time after the class.

In the summer of 2014, two LEED Lab students took and passed the LEED GA exam. Two more students continued through the summer and received paid internships through the Propel Center to continue LEED OM V4 credit documentation. The students also continue to work on campus wide policies for green cleaning, energy efficiency, water conservation and waste diversion. These policies can be used for the EBOM certification and will also serve for two new campus buildings and future facilities that are seeking LEED certification. Two students were hired by a local contractor to do LEED documentation for a new building seeking LEED Gold certification. LEED Lab passed through the curriculum and academic programs board at Colorado State University-Pueblo and is now a permanent course and upper division elective.

## **Conclusion**

LEED Lab is an excellent tool for experiential learning while integrating green building and sustainability initiatives on campus. Through innovative teaching, it serves to enhance academic experiences while providing on campus resources for LEED projects. Students obtain relevant professional experience conducting hands on work towards LEED certification of a campus building or facility. By focusing on the Existing Building Operations and Maintenance certification there is not the limitation of having a new construction project to certify. The knowledge

gained in the course prepares the students for accreditation opportunities such as becoming a LEED Green Associate (LEED GA) or LEED Accredited Professional (LEED AP) thus setting themselves apart in a competitive job market. As part of the LEED certification process, students develop campus green building and sustainability policies which will have a community-wide impact for years to come.

Delivering LEED Lab requires extensive collaboration between on campus stakeholders, the USGBC and GBCI. Recognizing the interests of each party and strong open communication will lead to a successful program. The course will develop the knowledge, skills and attitudes necessary to contribute to green building. In turn, this will result in a positive contribution on the construction industry and the built environment.

## References

Beatty, M. (2010, October 28). *GSA Moves to LEED Gold for all new Federal Buildings and Renovations* [WWW document] URL <http://www.gsa.gov/portal/content/197325>

Bureau of Economic Analysis (2011). *BEA News Release: Gross Domestic Product*. Accessed Oct. 31, 2014

Doucot, K, Ermann, K, Tafone, A, Celik, B (2012). Developing an Introductory Green Building Workshop for and with Construction Management Students. *Proceedings of the 48th ASC Annual International Conference*, Associated Schools of Construction, USA.

Kivunja, Charles Dr., (2014). Theoretical Perspectives of How Digital Natives Learn,. *International Journal of Higher Education*, Vol. 3, No. 1; 2014. pgs 94-109

Mah, D.E., Arain, F & Sharma, V (2014). Work Integrated Learning as an Effective Pedagogy for Enhancing Employability of Young Professionals in the Construction Industry. *Proceedings of the 50th ASC Annual International Conference*, Associated Schools of Construction, USA.

McGraw Hill Construction (2010). *Green Outlook 2011: Green Trends Driving Growth* Accessed October 31, 2014

McGraw Hill Construction (2013). *Dodge Construction Green Outlook 2013* Accessed December 20, 2014

U.S. Department of Commerce (2011). *Annual Value of Construction Put in Place – 2002-2010*. Accessed October 31, 2014.

USGBC. (2011). *United States Green Building Council* “LEED Public Policies 2009” Retrieved from <http://www.usgbc.org/Government>

USGBC. (2014). *United States Green Building Council* “LEED Certification Update: October 2014” Retrieved from <http://www.usgbc.org/articles/leed-certification-update-october-2014>

USGBC. (n.d.). *United States Green Building Council* “Green Building Facts” Retrieved from <http://www.usgbc.org/articles/green-building-facts>

USGBC. (n.d.) *United States Green Building Council* “A green economy is a growth economy” Retrieved from <http://www.usgbc.org/Docs/Archive/General/Docs10759.pdf>