

”Was it Worth It?” Reassessing the Lasting Value of a LEED Credentialing Course to its Students a Few Years After Graduation

Major Jennifer Gonser, United States Military Academy, West Point

MAJ Jennifer Gonser Jeremiah Stache is an instructor in the Department of Civil and Mechanical Engineering at the U.S. Military Academy, West Point, NY. He received his B.S. from the U.S. Military Academy, West Point; M.S. from the University of Illinois, Urbana-Champaign and a Masters of Philosophy in Engineering from University of Cambridge, England. Her research interests include construction engineering, sustainable design, infrastructure systems and engineering education.

Capt. Todd Mainwaring P.E., United States Military Academy, West Point

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Introduction

Within the engineering undergraduate education community there is an understanding that the concepts taught should directly prepare students for their life in industry. As universities consider adopting the principles of total quality management, which stresses education as a “customer-driven process, focusing on the needs of clients and providing mechanism to respond to their needs and wants” (Sallis 2014), industry feedback becomes increasingly important. Tener argues that hiring rates and industry satisfaction with graduates’ performance is a direct reflection of the quality of the university’s program (Tener 1996). This paper looks at a particular course and investigates its link to industry which in turn informs the course creators as to the appropriate content and format of the course. The course in question offers its participants an opportunity to earn a LEED GA Credential that the students can take with them upon graduation out into industry. As the course is taught at the United States Military Academy, nearly all graduates will join the US Army profession immediately following graduation.

LEED

LEED, Leadership in Energy and Environmental Design, is a sustainability rating scheme created and managed by the United States Green Building Council (USGBC). Using a system of credits for sustainability features, buildings certified under the LEED system are eligible for a plaque advertising the sustainable nature of the building. LEED certification is based on the buildings performance in seven key areas: Location and Transportation, Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, and Innovation. LEED APs (Accredited Professional) are credentialed to guide a project through the LEED certification process. Before becoming a LEED AP, members must first achieve a LEED GA (Green Associates) credential. This requires the member to register and pass an exam, currently at a cost of \$150-\$200. Earning a LEED Green Associate credential requires periodic self-improvement to maintain currency. Every two years, LEED Green Associate’s must earn fifteen continuing education hours. These hours can take the form of formal classroom instruction, project participation, authorship and volunteering. Associates self-report this information via their USGBC account online.

Initially specializing in new construction, LEED has branched out to include such areas as interior design, homes, operation and maintenance and neighborhood development. Begun in America in 1998, LEED has spread to over 150 countries and has certified 79,000 projects. In order to stay of the forefront of the application of sustainability in design and construction, LEED has evolved through four iterations. Reflecting the increasing rate of innovation, LEED version 2, launch in 2000 was followed by version 2.0 (new construction) in 2005, version 3 in 2009 and version 4 in 2013. As a result, “61% of corporate leaders believe that sustainability leads to market differentiation and improved financial performance” (USGBC 2017) though it comes with a cost. The process of certification generally adds 2% to the cost of a project.

CE489: LEED GA

The United States Military Academy graduates about 50 civil engineers every year that commission in the Army as second lieutenants. Some of the graduates will join the Engineer Regiment and may go on to oversee United States Corps of Engineer (USACE) Districts. The Department of Civil and Mechanical Engineering strives to give them the tools necessary for that challenge. As the Army continues to make sustainable design principles a requirement for construction, sustainability is becoming an ever more entrenched aspect of the program.

Therefore, in 2013, the Department began offering an independent study in which the students could prepare for, and become, credentialed in LEED (hereafter referred to as the credentialing course). The course itself has three objectives:

1. Students attain the Envision Provisional Sustainability Professional (ENV SP) credential. (Not addressed in this paper).
2. Students achieve accreditation as a LEED Green Associate.
3. Students have a better understanding of sustainability principles and practices, as well as an ability and desire to apply them in the future.

The course focuses heavily on the first two objectives. A full 40% of the course grade was achieving the successful LEED GA credential. All the study resources focused on preparing for and passing two credentialing exams, LEED being the most important. The remaining portion was devoted to presentations and articles about why having LEED might be useful in the future. The students would independently prepare and met occasionally to report on the status of their preparations.

In the first year it attracted 2 students but has grown ever since and, this year, 25% of all Civil Engineering majors elected to take the credentialing course as one of only three electives that are available to them under a normal academic load.

Research Question

This paper seeks to understand to what extent the course delivers on expectations set by the course creators and what mechanisms there are to provide industry feedback that support or adjust the balance of course content between teaching sustainability concepts (theory) and focusing on credentialing (specific skills). It will examine if perceived value of the credentials and knowledge gained in the course is (a) generally positive or negative, (b) consistent across job descriptions (field of practice) (c) stable over time, and (d) consistent with employers' view. Specifically, this paper looks at the LEED credential earned by the students and its usefulness in their careers as perceived by themselves and their employers. This builds on research about the general perceptions of the value of LEED GA credentialing by looking at a specific industry, querying the employers in addition to the former students and adds a time element.

Literature Review

ABET and Sustainability

This paper's literature review will investigate how engineering courses receive feedback from the industries they feed as well as looking at the marketability of LEED credentials now and in the future. Much of this revolves around the ABET process that accredits engineering programs. Increasingly, the concept of sustainability has been integrated into the student and curriculum

outcomes as described by the ABET Program Criteria for Civil Engineering Programs. The criteria for the 2016-2017 accreditation cycle includes several mentions of sustainability, as follows:

- “[ABET] criteria are intended to provide a framework of education that prepares graduates to enter the professional practice of engineering who are ... knowledgeable in topics relevant to their discipline, such as usability, constructability, manufacturability and *sustainability*...”
- Under Civil Engineering Program Curriculum criteria “The curriculum must prepare graduates to ... design a system, component, or process in at least two civil engineering contexts; include principles of *sustainability in design*...” (ABET 2015).

For the Civil Engineering Discipline, ABET relies on the input of the American Society of Civil Engineers (ASCE) who consider themselves a “recognized leader in this [sustainability in design] advancing area” (ASCE 2015). The concept of sustainability even appears in the Civil Engineering Code of Ethics as one of the Fundamental Canons that “Engineers shall...strive to comply with the principles of sustainable development...;” (ASCE 2015) yet more evidence that sustainability is becoming a foundational and essential component of an engineering education.

ABET Criterion 2

How these open ended outcomes are achieved is assessed by a combination of the ABET Boards and the Institutions themselves. The Criterion 2: Program Educational Objectives (PEO) states that “The program must have published program educational objectives that are consistent with the mission of the institution, the **needs of the program’s various constituencies**, and these criteria.” (ABET 2015). According to the National Engineering Education Research Colloquies: “Students and employers alike expect a high degree of synergy between what is learned in [the] classroom and what is needed in the field for successful practice” (The Steering Committee of the National Engineering Education Research Colloquies 2006). Much of this process is left to the individual departments within in institution (Younis 2002). As a result, many institutions have industry advisory committees that serve the role of constituency representatives. ASCE has recommended the establishment of a practitioner-in-residence program for civil engineering departments (Koehn 2004).

Changing Attitudes toward LEED

Several studies have researched the perceived value of LEED credentialing in various industries. Bruce, Strong, and Gebkin conducted studies on the, now outdated, LEED v2 which looked at such criteria as perception of increased benefits in terms of “recognition, salary, promotional opportunities, prestige among superiors, prestige among individuals within their organizations, and prestige among individuals outside their organization” (Bruce, Gebken and Strong 2010). While 70% of general contractors “felt as though the credential did not have an impact on their salary” but the majority found perceived benefits in other areas like prestige (Bruce, Gebken and Strong 2010). Engineers in architecture/ engineering firms, however, “do not find accreditation as beneficial in their careers” according to a later 2010 study by Gebken (Gebken, Bruce and Strong 2010). Perceptions can also be misleading as a study by Tucker, conducted in 2012 found. This “study suggests that [sustainability] credentials have on average had a relatively small impact on the participant’s career or self-perception” (Tucker, et al. 2012). It also found

that there seemed to be “no significance difference between the perceived value of the credentials” regardless of which sustainability credential you had (LEED GA, Green Globes Professional or Green Advantage Certified Practitioner) (Tucker, et al. 2012). As Tucker also points out, “much of the reported value [of sustainability credentialing] is in the form of claims made by certifying organizations” (Tucker, et al. 2012). The value of LEED GA, therefore is not demonstrated to be unquestionable and universal but rather dependent on the industry and individual perceptions.

Furthermore, the field of engineering is constantly advancing at an ever increasing rate. Attitudes toward LEED in the industry appear to be changing also. GreenBuild is an annual meeting of over 20,000 green building and design professionals and sustainability leaders that meet to share best practices in sustainable development, sponsored, in part, by USGBC (GreenBuild 2016). With the growing adoption of sustainable development into local codes, the 2016 conference openly questioned if LEED was becoming obsolete. With the high cost of LEED certification, there is a growing movement to create LEED certifiable buildings that follow many of the principles espoused by LEED without actually submitting to the lengthy and costly process of actual certification. The USGBC sponsored conference concluded that LEED did still have a role as an industry leader that continues to push the boundaries of sustainability in design.

Methodology

Given the shifting view, the authors sought to discover how useful the LEED credential was to graduates of the credentialing course. Surveys and interviews were the primary methods the authors employed to determine the perceived value of the credentialing course. Google Forms served as the vehicle to solicit responses and compile information. Although both sample sizes were small, the authors experienced high response rates. Of the employers contacted, all 23 responded. Over half of the 33 former students provided feedback through the survey. This comprised 54% of the entire population of respondents.

Participants

The research questions posed depended on feedback from two distinct populations: former students, now employees, and employers. First, the graduates of the credentialing course provided the perspective of the employee. This is a relatively small sample of former students; the course has only been offered since 2013 and averages 10 students per year. However, all graduates of the program who entered the Army were at least contacted with the survey. The employee population is between 22 and 30 years old, hold an engineering degree and serve in the United States Army. They are all junior officers--between the ranks of second lieutenant and captain--and hold positions such as staff officers, platoon leaders and executive officers. Most, however, are still in some form of academic setting as the first year of military service involves several Army schools to prepare officers for their future positions. These roles expose them to operational and administrative aspects of their organizations.

More senior Army officers, serving as battalion and brigade level commanders, provided the employer perspective. These lieutenant colonels and colonels have served over 15 years in both combat and training environments. Typical career paths involve tours in many types of units where the value of technical engineering expertise depends on the mission, organization and

environment. All of these respondents are engineer officers and many hold advanced engineering degrees. However, the missions of the organizations they lead are diverse. The majority (65%) lead units involved in combat operations, while 25% command USACE Districts.

Protocol Design

Surveys were the primary method used to gather information from the employer and employee populations. While interviews and student reflections also yielded insights into the questions posed, the majority of the results and conclusions were drawn from online surveys. Both sample populations are widely dispersed across the United States and abroad, so this method made it possible to reach more respondents. Two separate surveys addressed each population--employer and former students. The authors sent links to the respective surveys via email along with a consent form which explained the purpose of the research committed to preserving participants' anonymity. The surveys employed short answer questions to elicit individuals' unique perspectives, but the majority of the questions were structured using rating scales. By allowing respondents to rate--between 1(lowest) and 5 (highest)--the usefulness of the knowledge, credential and training, respectively, the researchers could delineate and rank the aspects of the program that have the most perceived value. Both surveys can be found in Appendix A.

Results and Discussion

Impressions Immediately Following the Course

At the completion of the credentialing course, students were asked to write their reflections of the course and their anticipated utilization of the credentials and skills learned. Several of the students thought the credentials would help them be more competitive or be used in the course of their career. Some excerpts from their comments are below:

- “The accreditation will enhance the individual’s military career as well as his or her professional career after he or she is complete with their service to the nation.”
- “Earning these professional credentials ... makes engineering students more marketable upon graduation”
- “The overarching purpose was to gain familiarity with sustainable building practices with the hope of applying them in both a military and civilian context”
- “We Army Engineers are therefore well-advised to earn professional credentials in sustainability rating tools so we can apply these principles to our projects.”
- “Professional certifications in sustainable design and development are proving invaluable for engineers and construction professionals in civilian practice as well.”

Two other trends were evident in the students’ responses as well: (1) the desire to be of service to their new career and profession and (2) the value of the independent nature of the process of becoming credentialed. Some excerpts from their comments are below:

- “Most importantly, you’ll prepare to be a leader in our new Army culture that values sustainability.”
- “With our credentials we expect to provide adequate sustainable designs to make a lasting, progressive impact on the military”
- “The process of studying for and taking the accreditation exams is an excellent way to learn the basics, demonstrate knowledge, and display commitment to personal and professional development.”

- “Earning credentials allows students to demonstrate their ability to achieve professional goals – a highly marketable characteristic for future engineers.”
- “It inspires [the students] to join the profession, pursue lifelong learning in support of their development, and implement sustainable solutions in industry throughout their careers.”

Interestingly, this semester (2016-2), only two out of nine students taking the independent study cited the credential as their primary motivation for taking the course. The majority had an interest in the sustainability concepts and the structure of the course which relies more on independent study than a structured approach.

Impressions by Former Students within Four Years of Graduation

The structure and content of the survey responses identified some patterns in perceptions of the usefulness, both past and future, of the LEED credential the students received. While the authors are cognizant of the small sample size, the result can still identify trends that are useful to the authors’ purpose of assessing the course objectives and expectations.

As mentioned in the methodology, the employees were asked for their opinions on a scale of 1 (lowest) to 5 (highest). 50% of the former students, who graduated up to four years ago, responded that, so far in their careers, their LEED credential has only been slightly useful or less (1 or 2 of 5). Appendix A shows the response results.

When analyzed to see if there were any consistency or trends across job descriptions or over time, both factors showed very similar results. The similarity reflects the standard promotion and advancement timeline for most Army Officers. As Figure 1 shows, the more advanced the employee was in their career, the more useful they had found the LEED credential. Employees just one year after graduation (shown in blue on the graphs in Figure 1) and those who were still in formal education averaged a usefulness of 1.67 or 1.83 by time and job description, respectively. Those with one to two years of job experience (orange on graphs) and were in their entry level position averaged a moderate usefulness, 2.9 and 2.89, respectively. Finally those with two to three years’ work experience (green on the graphs) and had received at least one promotion found their LEED credential fairly useful (3.5).

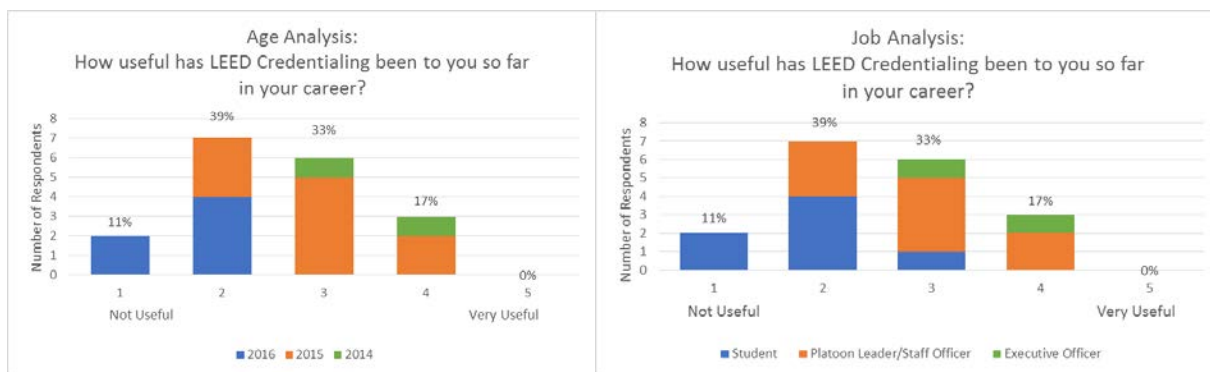


Figure 1: Utility of LEED Credential by Graduation Year and Job Description

This changes drastically when the former students were asked to anticipate future use of the LEED credentials and the concepts it teaches. The average then jumps to fairly or quite useful (4), as Figure 3 shows.

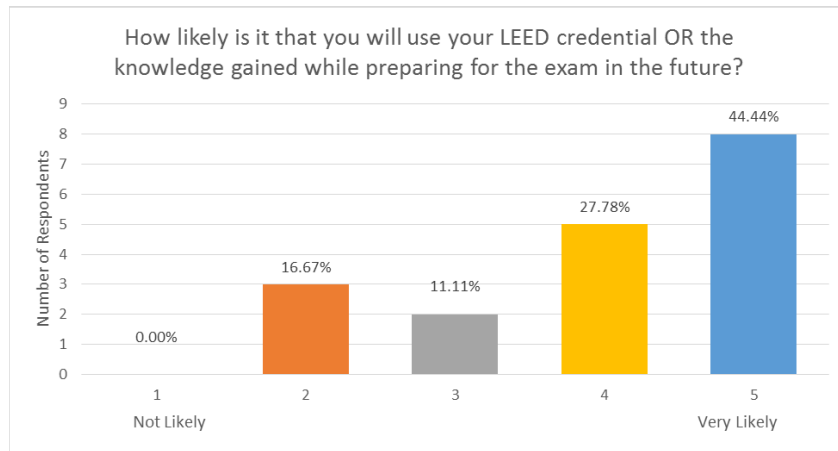


Figure 2: Future Utility of LEED (percentages represent fraction of respondents with that response)

The authors conclude that the former students perceive that LEED is a tool that has greater use the higher in the organization they progress. The perception that LEED will be useful in their future is 100% among the employees with two to three years' experience (those who graduated in 2014). It is worth considering that these older employees are also nearing the end of their service obligation and might be considering jobs after the Army.

The study also looked at the perceived value of the knowledge gained in the seven key areas of LEED were assessed individually and the results are displayed in Figure 2.

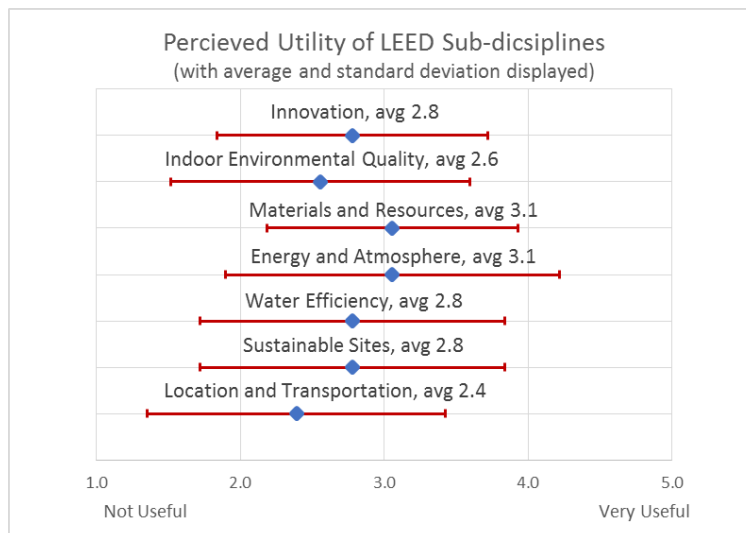


Figure 3: Utility of LEED Key Areas

It is interesting to note that the three most utilized key areas of LEED; Energy and Atmosphere, Materials and Resources, and Water Efficiency, align well with the Army Net Zero Program which aims to achieve improvements in water, energy, and waste sustainability. While only 50%

of respondents found the LEED credential itself useful, 89% of respondents found the information, techniques, or technologies studied while preparing for the exam useful in at least one category.

The positive outlook continued with unanimous support for the credentialing course: 100% of respondents both stating that they would still take the credentialing course, knowing what they know now, and also that they would recommend current students take the course. It is worth pointing out that this includes those respondents who thought the credential had not been at all useful to them in the past and was only slightly useful in the future. The predominant theme throughout the responses revolved around the former students' future, especially after the Army. The respondents overwhelmingly recommend the course on the basis of it being useful, someday. Below are some samples of the responses:

- “I believe that the credential will be very beneficial to have as a civilian to improve sustainable building methods.”
- “I know it will be very helpful in my next job and later down the road in USACE.”
- “It is something to keep in the back of my head for post-Army careers.”
- “I expect its relevance to grow as I transition out of the Army in the future.”
- “I believe that it will be valuable as an officer as well as in my career in the civilian sector. I also think that the opportunity to earn credentials as an Engineer in training while attending school is a great way to be more marketable in both the civilian and military sectors.”
- “The credential is not as applicable in the military but if [students] plan on working as a civil engineer in the future it will be a great skill set to have.”

Impressions by Employers

In light of the former students' strong belief that the credential will be far more useful later in their career, the responses from their potential future employers reveal a disconnect. It is important to remember that the employers surveyed represent leaders in the US Army Engineer Regiment and do not represent the opportunities the employees will have after their Army career ends. Only 50% of the employer found a LEED credential valuable within their organization. Appendix B shows the responses.

Furthermore, just under 30% of respondents felt that the credentialing course should be cancelled entirely. Initially, this result was discouraging as, while most employers see the utility in mastering sustainable practices, many recommended against their future employees pursuing these credentials. Specifically, battalion and brigade commanders did not see any opportunities to implement these skills in an employee's first seven years of service. Those years, they argue, should be focused on tactical skills and troop leading. However, several did see value in preparing students for professional licensure; just not the LEED. Ensuring students are capable of passing the Fundamentals of Engineering (FE) and Professional Engineer (PE) exams received strong employer support. Within the written responses, it appears that the employers are not against the credential so much as they prioritize it lower than the PE and believe the students' time should first be spent on preparing for that exam. Some excerpts are below:

- “teaching [students] at [a university] may **not be the best use of time** or resources as many of the commissioned officers may not practice or be able to sustain their credentials during the first four-five years in their career.”
- “Your graduates must have a deeper understanding of engineering fundamentals which never change... **LEED standards... will likely change** significantly in the 7-10 years between when [the university] teaches a [student] and when [they work at] USACE.”
- “I don't think this would be good to pile on what is **already a busy schedule**. Focus on getting people to pass the FE and then remaining proficient enough to pass the PE.”
- “...time is better spent ensuring [students] will succeed in **passing the FE/EIT** and teaching project management that will have practical application as a company grade officer and ultimately lead to PMP [Project Management Professional] certification.”
- “I recommend **prioritizing success in the FEE/EIT** over the LEED”

The employers who, while acknowledging that their employees may not directly utilize a LEED credential, still felt the university should continue offering the credentialing course, took a longer view of things. This group represented 70% of the employer respondents. Many of these stressed credibility, believing that possessing such knowledge was useful and the license earned immediate recognition both in and out of their organization. This implicitly confirms what the employees believe about the potential usefulness of the credential in a civil engineering career after the Army. Some of the responses are below:

- “Any civilian credential will help engineer officers gain **credibility** [with] their civilian counterparts.”
- “...immediate **credibility** within a USACE organization...”
- “...we will need to produce Officers that have the technical **expertise** and **confidence** to succeed in our USACE assignments throughout their career.”
- “The biggest benefit is to **build depth** within the Regiment to understand the direction that civil engineering is going and how it benefits”

The employers were also asked to rank the key areas of LEED with 1 being the most important to their organization to 7 being the least important. Appendix C shows the results. These results indicate that higher level leaders deal more with external interest groups. Engagement with communities and stakeholders are more prevalent in the sustainable sites and location areas of LEED. Here again, there is some disconnect between the employees’ responses and their employers’ (Table 1). What the employers’ value is not what the recent students report using.

Table 1: LEED Key Area Comparison (Employers vs Employee)

Rank	LEED Key Areas for Employers	LEED Key Areas for Former Student Employees
1	<i>Sustainable Sites</i>	Energy and Atmosphere
2	<i>Location and transportation</i>	Materials and Resources
3	Water Efficiency	Water Efficiency
4	Energy and Atmosphere	<i>Sustainable Sites</i>
5	Materials and Resources	Innovation
6	Indoor Environmental Quality	Indoor Environmental Quality
7	Innovation	<i>Location and transportation</i>

Conclusions / Recommendations

Although the sample size was small and there is some self-selection in terms of the voluntary nature of the responses, there are still some lessons the authors drew this report. In summary, the LEED credential is only slightly useful to the graduates during their first few years of employment and, while they overwhelmingly believe that it will be far more valuable in the long term, it is not a sentiment shared by their future employers who see the credential as only being slightly useful. Despite this, the majority of all respondents believe that a LEED credentialing course should still be offered to students. There is a value, both groups of respondents believe, in the self-discipline and lifetime learning that comes from achieving a professional credential and the credibility it bestows. Furthermore, both groups of respondents believe that the payoff of this credential will be most utilized in the students' post-Army civilian careers.

Additionally, this study reveals a tension between teaching a very specific set of skills, in this case the knowledge of the LEED certification process, and teaching theory and concepts. It reveals some questions that educators need to ask about the content of their courses, especially those that focus heavily on teaching a particular skill.

First, are the graduates likely to use this skill? Overwhelmingly, the former students thought so. Furthermore, they did indicate that some of the concepts learned while attaining the credential have been useful. The concept of sustainability is also highly valued by the ABET board, as evidenced by the perfusion of sustainability concepts throughout the accreditation requirements. However, simply because LEED GA is valuable in one industry does not necessitate that it is valuable in another. At this time, it seems leaders in the Army prioritizes LEED credentialing below other credentials such as the P.E. Each program should assess if the credential is beneficial for the type of employment it prepares its students for. Furthermore, future employers, in addition to former students, need to give constant feedback into their value of a particular credential in order to get a more complete view of the credential's benefits.

Secondly, instructors must give some consideration to when the graduates will use the skill. In this study case, very few graduates reported using the specific credential within their first four years on employment. Many of their future employers were doubtful that the graduates would likely use the skill at all in the first ten years (the employers queried usually manage officers that have been in eight to ten years). Both former students and employers did state that the credential might be valuable in their subsequent career (after the Army). If this is the case, the students will be anywhere from five to twenty years after the completion of the credentialing before being able to use it.

This raises two additional questions: 1) are the requirements of the skill (credential in this case) likely to change between the time the students learn it and when they are able to use or apply it? and 2) will the students be able to maintain the skill until then? Looking at the LEED system, which has gone through four iteration in 20 years, and given the USGBC's goal of being on the forward edge of sustainability in construction, it is likely that our students will be utilizing a newer version from the one they learned. Furthermore, in the meantime, given the demands of a military career, it might be difficult for the former students to be able to maintain their credentialing. This area represents an opportunity for further study.

This study concludes that the content and format of the credentialing course needs to change. It must spend more time on the foundational concepts of integrating sustainability into design and

less on simply obtaining specific credentials. To this end, the instructors added an application project to the course where the students must apply sustainability concepts to a local problem. In the future, they are brainstorming ways to add more discussion groups on each of the major LEED components about how the industry is evolving and what are the latest innovations. The focus will be shifting towards mastery of concepts over gaining a particular credential.

Specific skills are very necessary but before instructors spend too much focus on them, they must evaluate if their students will use it, when, will it likely change and how it will be maintained? This study has allowed the credentialing course's instructors to reevaluate the balance of teaching concepts and theories that allow students better flexibility and adaptability in the future and teaching specific skills that make the students expert in a certain niche.

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Appendix A: Survey Questions

Former Student Questions

How useful has LEED Credentialing been to you so far in your career?

Scale- 1-5

How useful has the information, techniques, or technologies studied during the LEED exam preparation in location and transportation been? This block included such things as surrounding density, diversity of use, alternative transportation, green vehicles.

Scale 1-5

How useful has the information, techniques, or technologies studied during the LEED exam preparation in sustainable sites been? This block included such things as pollution prevention, environmental site assessments, storm water management, heat island reduction, light pollution.

Scale 1-5

How useful has the information, techniques, or technologies studied during the LEED exam preparation in water efficiency been? This block included such things as outdoor and indoor water use reduction and monitoring.

Scale 1-5

How useful has the information, techniques, or technologies studied during the LEED exam preparation in energy and atmosphere been? This block included such things as reduced energy consumption and renewable energy.

Scale 1-5

How useful has the information, techniques, or technologies studied during the LEED exam preparation in materials and resources been? This block included such things as waste management, recycling, life-cycle materials, product selection.

Scale 1-5

How useful has the information, techniques, or technologies studied during the LEED exam preparation in indoor environmental quality been? This block included such things as construction and post- construction air quality, thermal comfort, daylighting and acoustics.

Scale 1-5

How useful has the information, techniques, or technologies studied during the LEED exam preparation in innovation been? This block included new ideas in sustainability.

Scale 1-5

How likely is it that you will use your LEED credential OR the knowledge gained while preparing for the exam in the future?

Scale 1-5

Given what you know now, would you still have taken the LEED and Envision Certification Course at West Point?

Yes, no

Why or why not? (text)

Given what you know now, would you recommend current cadets take the LEED and Envision Certification Course at West Point?

Yes, no

Why or why not?(text)

Has knowledge gained while preparing for the LEED exam given you opportunities or understanding that you would not otherwise have?

Yes, no

If yes, in what way?(text)

How likely is it that your LEED credentialing or the knowledge gained while preparing for the exam will give you opportunities or understanding in the future the you would not otherwise have?

Scale 1-5

Employer Questions

Do positions in your organization require sustainability credentials (LEED, ENVISION, etc)?
(Yes/No)

How valuable is it to your organization to have LEED credentialed officers?
(Scale of 1-5)

Which of the following techniques, technologies or information are most important to your organization? Rank from most important (1) to least important (7).

Location and transportation: surrounding density and diversity of use considerations, integration of alternative transportation, parking lot footprint and green vehicles.

Sustainable Sites: construction activity pollution prevention, environmental site assessments, open space considerations, rain/storm water management, heat island reduction, and light pollution prevention.

Water Efficiency: outdoor and indoor water use reduction and monitoring.

Energy and Atmosphere: reduction in energy consumption and the use of renewable energy sources.

Materials and Resources: waste management and recycling, life-cycle materials impact and product selection.

Indoor Environmental Quality: construction and post- construction air quality, thermal comfort, daylighting and acoustics.

Innovation: new ideas in the advancement of sustainability.

Do you think West Point should offer a LEED and ENVISION Certification Course?

Yes/No

Why or why not? (text)

Appendix B: LEED Value/Usefulness Figures

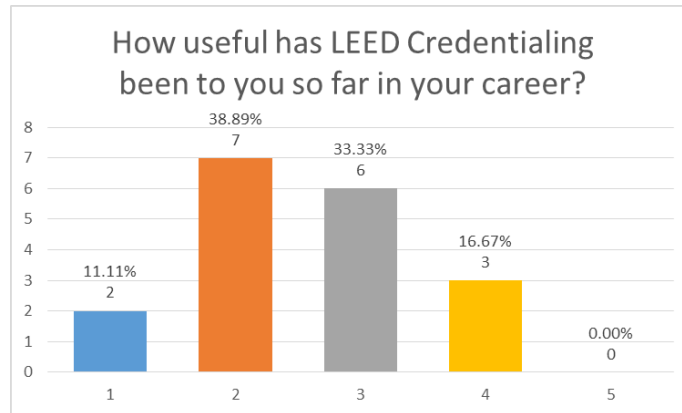


Figure 4: Past Usefulness of LEED

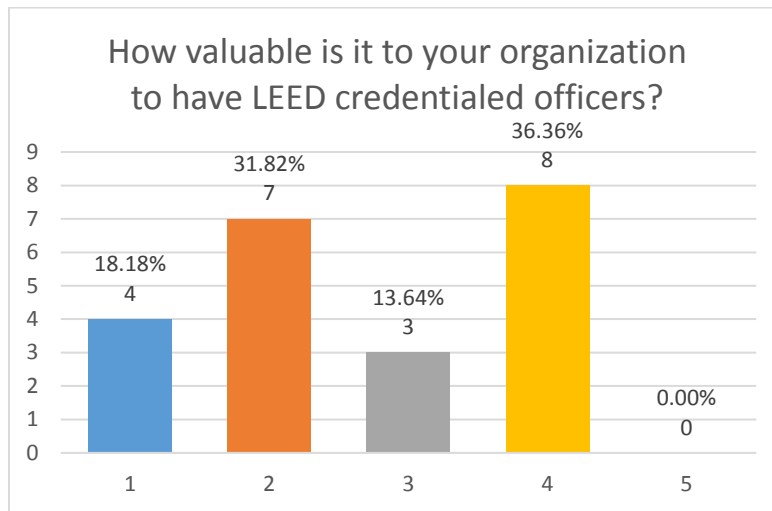


Figure 5: Employers Valuation of the LEED Credential

Rank	LEED Key Areas	Average Rank	Median Rank
1	Sustainable Sites	2.95	2.5
2	Location and transportation	3.91	3.5
3	Water Efficiency	3.95	4
4	Energy and Atmosphere	4.05	4
5	Materials and Resources	4.14	5
6	Indoor Environmental Quality	4.45	5
7	Innovation	4.55	5

Table 2: Ranking of LEED Key Areas by Employers