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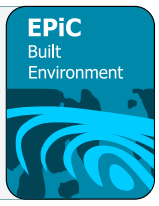

Do High Impact Educational Practices Translate to Peak Learning Moments? An Introductory Study of Student Experiences in the Built Environment

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Emphasis on universities to increase the value of the education they provide has been mounting for several years. Through the COVID-19 pandemic, students, parents, and educators have become more aware of the value associated with the traditional relational approach of in-person educational experiences. The COVID-19 pandemic provided an unexpected opportunity to conduct a world-wide test drive of online learning, which only highlighted concerns about the return on investment in higher education. High Impact Educational practices have been seen to elevate the student learning experience and have become an initiative for many universities. This study investigated HIP participation by built environment students at one university to better understand the frequency of student participation and the impact of their participation. The results indicated that all students in the built environment disciplines participate in at least one HIP before graduating, and many participate in numerous HIPs. However, less than 20% of students identify HIP participation as a peak learning moment in the college career.

Key Words: Construction Education, Engaged Learning, High Impact Educational Practices, Internship, Study Abroad

Introduction

COVID-19 shifted construction management education to expanded online learning, many faculty have realized the value inherent in the traditional relational approach long-valued within construction management. These relationships take many forms including connections with industry through internships; peer-to-peer connections for students; faculty-student interaction; study abroad; service learning; or opportunities for construction management students to engage with students in architecture or engineering. As college expenses continue to rise for students and parents, on-campus construction management programs have a unique opportunity to differentiate themselves by designing experiences that elevate both learning and the overall college experience for students.

Almost 15 years ago, George Kuh recommended a set of specific educational practices known as High Impact Educational Practices(HIPs) (Kuh, 2008).With the goal of elevating student learning and the student experience, the following practices were identified:

- First-Year Experiences
- Common Intellectual Experiences
- Learning Communities
- Writing-Intensive Courses
- Collaborative Assignments/Projects
- Undergraduate Research
- Diversity/Global Learning
- ePortfolios
- Service Learning, Community-Based Learning
- Internships
- Capstone Courses and Projects

Kuh recognized the value to students who acquired knowledge, found real-world ways to apply it, and then reflected on those experiences. Students who participate in HIPs tend to have higher grades and retain, integrate, and transfer the knowledge gained at higher rates than students who did not engage in HIPs (Nelson et al., 2008). Additional research shows other benefits to students including increased confidence and enhanced cultural competency (Kramer et al., 2007; Peck et al., 2010). HIPs provide built environment students opportunities to engage in diverse experiences, solve difficult problems, encourage metacognition, and create opportunities for peak learning experiences.

Despite the success of HIPs, there are challenges for construction programs who seek to use them to elevate the student experience. First, just because something is called a high impact practice does not make it so. As faculty champions of some of these experiences, we have seen how some HIPs have been extremely impactful for students while others have not. Second, HIPs often require students to self-select to participate in them. Some even require self-selection and additional financial commitments yielding high impact events that are sometimes not accessible or not fully understood by students.

In 2017, Chip and Dan Heath published a book that explored impactful experiences in life, specifically experiences that change a person's perspective and resonated for long after the event (Heath & Heath, 2017). College graduation, winning the state championship basketball game, the birth of a child, the first day of a new job; these types of experiences tend to resonate. Their work indicated that when people reflect on these types of experiences, they tend to recall flagship or peak moments. These peaks are both impactful (as with HIPs) and meaningful (emotional connection). When considering the concept of peak learning experiences, previous research has shown that participating in HIPs alone may not translate to a peak learning experience.

Auburn University has placed a strategic emphasis on "measurable outcomes". Since the fall of 2019, the Campus Engagement and Experience Survey (CEES) has measured HIP participation across the University. The survey asked students to identify if they participated in four specific HIPs:

- Study abroad
- Internships and/or Co-ops (While both represent formal work opportunities, co-ops are students that work and attend school in alternating semesters.)
- Undergraduate Research
- E-portfolios (purposeful collection of a student's work that showcases learning progression and achievement).

In addition, students were asked within the same survey to describe their "peak" educational experience as an undergraduate student through an open-ended qualitative question.

While the CEES provides a wealth of data to examine the student experience at Auburn University, little has been done with the information to date. If the relationship between the HIPs students participate in during undergraduate careers and peak educational moments could be better understood, it may be possible to better support HIPs across the built environment. This study sought to investigate the frequency of HIP participation by built environment students and the relationship of HIPs to student self-identified transformative or peak learning experiences. Specifically, the following research questions were addressed:

- To what degree have built environment students participated in HIPs?
- Are some HIPs more common among specific disciplines within the built environment?
- To what degree are built environment students' self-identified peak educational experiences associated with HIPs?

This introductory research effort analyzed the data over the first four semesters of the CEES specifically for students within the built environment. Majors considered included architecture, construction management, interior design, environmental design, civil engineering, electrical engineering, and mechanical engineering. While the results for this study are confined to a single university, the study contributes to scarce research of HIPs within the built environment. Insight into potential opportunities and challenges for programs across the built environment is provided. And, the study provides a basis for a deeper study to determine if a connection exists between HIPs and transformative educational moments. If a direct linkage could be identified, resources across construction education may better be allocated to meet student needs and elevate the educational experience.

Literature Review

High Impact Educational Practices

In the late 1990s, the Boyer Commission authored ten recommended practices for institutes of higher learning (*Reinventing Undergraduate Education: A Blueprint for America's Research Universities*, 1998). Their recommendations were based on significant concerns about the graduating student at the time of the report that questioned if graduates could "think logically, write clearly, or speak coherently" (*Reinventing Undergraduate Education: A Blueprint for America's Research Universities*, 1998, p. 15). Much of the concern resonated from research which indicated limited student engagement in class and few learning experiences that resonated with the undergraduate student.

The Boyer commission report spurred a series of research articles including the development of high impact educational practices (HIPs) (Kuh, 2008). These "educational practices" were deemed as especially effective in areas of providing opportunities with diversity, solving challenging problems, fostering independent thinking, and motivating students. Kuh's work detailed how each selected practice elevated the student learning experience. Specifically, there was a focus on "deep" learning. This "deep" learning not only focused on acquisition of knowledge but also understanding the meaning of the information and often applying it.

Research indicated that students who participated in these HIPs made better grades, retained information at a higher rate, and integrated the knowledge gained with their overall education (Nelson et al., 2008). As students participate in HIPs, self-perceptions shift, and student confidence increases. Further research notes enhanced ability by students to connect with individuals in unfamiliar

communities as well as improved knowledge, skills, and attitudes (Kramer et al., 2007; Peck et al., 2010). Conversely, other studies argue that HIPs do not improve graduation rates among students noting that few studies have examined all ten practices, their relationship to each other, and their connection with college outcomes (Valbrun, 2018).

Transformative Experiences

Chip and Dan Heath's work on "The Power of Moments" (2017) emphasized how defining moments or a series of events that frame a moment of clarity shape our lives. And, they argue that these moments can be created. The concept of moments is based on four fundamental ideas:

1) When individuals consider an encounter, they often focus on key moments within the experience. Often, these occur at peaks, valleys, and times of transition.
2) A transformative moment is both significant and memorable.
3) Moments are created through one or more of four elements: i) elevation, ii) insight, iii) pride, and iv) connection.
4) It is important to recognize, celebrate, and set clear expectations at times of peaks, valleys, and times of transition.

Method

Data Collection

Students graduating in built environment majors were targeted for this research project including students majoring in construction management, architecture, interior design, environmental design, civil engineering, electrical engineering, and mechanical engineering. Data was collected using the CEES over four academic semesters including Fall 2019, Spring 2020, Fall 2020, and Spring 2021. The CEES was administered via the university course management system and consisted of approximately 40 questions that captured areas of demographic information, perceptions on class experiences, time at the university, expectations as a future alumnus, HIP specific experiences, and peak learning experiences. For this research, the authors only examined the portions of the survey related to the five specific HIPs and the open-ended question about transformative, peak learning experiences as an undergrad:

> *Describe a transformative learning experience, while a student at Auburn University, that helped shape the person you are today (a short experience that was both memorable and meaningful). Please be descriptive and note that the moment could take place anywhere (classroom, internship, study abroad, work, athletics, fraternity/sorority, student government, etc.).*

HIPs specifically addressed as part of the CEES included co-op, internships, e-portfolio, study abroad, and undergraduate research. The survey recognized that students may have multiple HIPs over the course of their undergraduate experience. Students were asked specifically which of the five HIPs in which they had participated in, with the option to include multiple HIPs if that was the situation for a given graduating student. For each HIP, students were asked to identify when they participated, why they participated, and what they got out of the experience.

All students who participated in the survey were graduating during the semester in which they completed the CEES. Completing the survey was required as part of the expectations within the zero-credit graduation course, UNIV-4AA0.

Data Analysis

Two of the research members from the Office of Academic Insight at Auburn University collected the data, coded the qualitative data in NVivo, and summarized quantities using an Excel spreadsheet. Data was then analyzed by the researchers to obtain specific responses to the research questions.

Within the qualitative transformational educational experience data, student responses were searched for HIP terms as identified by Kuh using the five HIPs specifically evaluated by the University. Specific search terms within open-ended student responses included the following:

- Co-op: “co-op”, “summer-op”, “coop”, or “co op”
- Internship: “internship” or “intern”
- E-portfolio: “writing”, “writing center”, “e portfolio”, “e-portfolio”, or “eportfolio”
- Study abroad: “exchange”, “international”, or “abroad”
- Undergraduate research: “research”

While peak experiences may have also included other HIPs as identified by Kuh, those peak experiences were not considered by this introductory study. The descriptive statistics for HIP participation were analyzed to identify frequency and percentage of involvement by students.

Results

To what degree have built environment students participated in HIPs?

Among the 963 students, 1205 high impact educational experiences were reported as outlined by major in Table 1. Note that each unique HIP instance is a situation where a single student participated in a HIP. One student could have participated in more than one HIP. For example, a graduating student may have done an internship and study abroad, counting as two unique HIP instances. However, a student participating in two internships would only count as a single HIP instance.

Table 1

Descriptive Statistics – Total Identified HIP Instances by Major

Major	Total Unique HIP Instances in Each Major	Total Students (Avg. HIPs/Student)
Architecture/Interior Arch.	164	93 (1.8)
Construction Management	215	165 (1.3)
Environmental Design	59	50 (1.2)
Civil Engineering	173	164 (1.1)
Electrical Engineering	139	115 (1.2)

Mechanical Engineering	383	329 (1.2)
Interior Design	72	47 (1.5)
Total	1205	963 (1.3)

On average, students reported less than two (1.3) of the measured HIPs during their undergraduate career.

Are some HIPs more common among specific disciplines within the built environment?

Table 2 shows counts of HIP instances by each major. Percentages shown adjacent to count values in Table 2 were the percent of instances in a specific major that participated in each HIP.

Table 2

Descriptive Statistics - Number of Students Participating in HIP (Average % of graduating students in major participating in that HIP)

Major	Co-op	Internship	e-Portfolio	Study Abroad*	Undergraduate Research
Architecture/ Interior Arch.	1 (1%)	64 (69%)	4 (4%)	71 (76%)	24 (26%)
Construction Management	36 (22%)	135 (82%)	10 (6%)	30 (18%)	4 (2%)
Environmental Design	2 (4%)	13 (26%)	29 (58%)	7 (14%)	8 (16%)
Civil Engineering	41 (25%)	82 (50%)	1 (1%)	11 (7%)	38 (23%)
Electrical Engineering	44 (38%)	44 (38%)	16 (14%)	5 (4%)	30 (26%)
Mechanical Engineering	110 (33%)	157 (48%)	7 (2%)	44 (13%)	65 (20%)
Interior Design	1 (2%)	46 (98%)	6 (13%)	13 (28%)	6 (13%)
Total	235 (24%)	541 (56%)	73 (8%)	181 (19%)	175 (18%)

* Study abroad was impacted in at least two of the four semesters due to COVID-19 limitations

From Table 2, all disciplines except for Environmental Design had instances of work experiences for an average of over 70% of graduates (combined co-op and internships). Work experiences appeared to be the dominant HIP experienced across all built environment majors with 776 students completing co-ops and/or internships. The average percent of students completing an internship exceeded those in co-ops for all majors except electrical engineering where the percentage was equal. Co-ops essentially do not exist in architecture, environmental design, and interior design.

E-portfolio engagement trailed all other measured HIPs for undergraduate students with an average of only 8% of graduating students participating. The e-portfolio was part of the University's Quality Enhancement Plan (QEP) in 2018 for accreditation as the university sought to have students reflect more deeply on their work. Only environmental design with an average of 58% of all graduating students participating seemed to have achieved significant traction in this area.

Architecture graduates had a high percentage of students studying abroad (average of 76% of all graduates). Engineering and architecture majors included the largest percentage of students completing undergraduate research (average of 20-26% of all graduates). In contrast, interior design and construction management programs trailed significantly in the number of instances of undergraduate research.

To what degree do built environment students associate their peak educational experience with HIPs?

Of the 963 graduating students in the built environment, 248 (25.75%) reported a HIP as a peak or transformative educational experience while an undergraduate student. Of those, 199 responses were related to the five HIPs addressed in this research (Table 3). The remaining 719 responses indicated peak or transformative educational experiences related to class projects, friendships, greek life, or significant connections with faculty or staff.

Table 3

Breakdown of Transformative Learning Experiences Associated with HIPs

HIP	Students Reporting HIP as Transformative Experience (% of respondents)
Internship	70 (7%)
Co-op	66 (7%)
Study Abroad	47 (5%)
Undergraduate Research	12 (1%)
E-portfolio	4 (0.4%)
Total	199 (21%)

As shown in Table 4, students indicated the largest number of transformative learning experiences associated with internships, co-ops, and study abroad. Transformative learning experiences in e-portfolios and undergraduate research were limited. When the total number of graduating students was considered, study abroad and co-op appeared to dominate the landscape for transformative learning experiences.

Table 4

Rank of HIP Experiences Identified as Peak Moments

HIP	Total Students Participating in HIP (from Table 2)	% of Graduating Students Reporting HIP as Transformative Experience
Co-op	235	28%
Study Abroad	181	26%
Internship	541	13%
Undergraduate Research	175	6.9%
E-portfolio	73	5.4%

Discussion and Conclusions

Previous research suggests that participating in HIP experiences yields higher grades, retention, integration, and transfer of knowledge at higher rates than students who do not engage in HIPs

(Nelson et al., 2008). When considering the concept of moments, the construct of true HIP experiences bears similar characteristics. However, achieving these benefits requires HIPs to be carefully constructed and executed so they generate the type of momentous experience that triggers these sorts of results. This research set out to investigate the frequency of participation and impact of HIPs on students in the built environment disciplines at Auburn University.

Overall, students in the built environment majors are participating in 1.3 HIPs on average. Internships and co-ops were identified as the most common, with study abroad and undergraduate research lagging behind. However, undergraduate research was overwhelmingly more common for engineering and architecture students than for construction management students. With respect to study abroad participation, it is reasonable to suspect that it was unusually low due to impacts from COVID-19 especially in two of the four semesters measured.

Students also indicated co-ops as one of the more impactful experiences. Interestingly, internships were not cited as often. One explanation could be that co-ops are more structured and have more oversight than internships. In addition, despite the lower overall participation rate, many students reported study abroad as a transformative learning experience. This suggests an opportunity for programs that may be interested in exploring study abroad experiences to offer their students. Given that it was a university focus, it was a bit surprising to see e-portfolios ranked so low – especially considering they are intended to serve as a mechanism for reflection of learning. These results provide a foundation for further exploration.

Future research should look at identifying ways in which we can enhance the student learning experience in the areas of internships, undergraduate research, and other approaches. Evaluating the factors that make co-ops more impactful for students than internships would provide opportunity to improve the internship experience. Studies should investigate how programs like construction management could expand opportunities for students to participate in undergraduate research. If e-portfolio was developed to encourage student reflection, it does not appear to be very popular. Could we look at other ways to get students to reflect on the work they have completed?

Another point that needs to be considered is the 25% of students that indicated HIPs, other than the five focused on in this study, as peak learning experiences. As well, 75% of students identified something other than HIPs as their peak learning experiences. Further research should be done to identify themes associated with these responses, what made them impactful, and how they can be used to improve opportunities for these types of learning experiences for more students.

This study has shown that every student graduating in the built environment disciplines at Auburn University participated in at least one HIP activity, and many participate in multiple HIPs. This is a positive finding when considering one of the noted challenges with HIPs is accessibility to all students. However, it is unclear how these rates compare to the students at whole at the university. This study has also supported previous research that participating in a HIP does not guarantee that it will be a peak experience for students. Further investigation on peak learning experiences should be done to better understand how we as educators can promote more of these types of experiences and consider how we can leverage HIPs to do this.

References

Heath, C., & Heath, D. (2017). *The power of moments: Why certain experiences have extraordinary impact*. Simon & Shuster.

Kramer, P., Ideishi, R., Kearney, P., Cohen, M., Ames, J., Shea, G., Schemm, R., & Blumberg, P. (2007). Achieving Curricular Themes Through Learner-Centered Teaching. *Occupational Therapy in Health Care*, *21*, 185–198. https://doi.org/10.1080/J003v21n01_14

Kuh, G. D. (2008). *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter*. Association of American Colleges and Universities. http://www.neasc.org/downloads/aacu_high_impact_2008_final.pdf

Nelson, T. E., Shoup, R., Kuh, G. D., & Schwartz, M. J. (2008). The effects of discipline on deep approaches to Student learning and college outcomes. *Research in Higher Education*, *49*(6), 469–494.

Peck, K., Furze, J., Black, L., Flecky, K., & Nebel, A. (2010). Interprofessional collaboration and social responsibility: Utilizing community engagement to assess faculty and student perception. *International Journal of Interdisciplinary Social Sciences*, *5*, 205–221.

Valbrun, M. (2018, April 25). Maybe Not so "High-Impact"? *Inside Higher Education*. https://www.insidehighered.com/news/2018/04/25/study-questions-whether-high-impact-practices-yield-higher-graduation-rates