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To Mandate or Not to Mandate: Internships in Industrial Design Education

Betsy Barnhart[1], Carly Hagins[2], and Katherine Tierney[2]

[1]University of Kansas, Lawrence, KS 66049, USA
[2]Western Michigan University, Kalamazoo, MI 49008, USA

ABSTRACT

Internships are widely valued with students, educators, and professionals believing they support student success and improve readiness for entry into the profession. However, it is unknown how a mandated internship experience in industrial design education impacts student experiences, the rate of participation, and the perceived quality of the internship. Through internships, students are immersed in work culture, processes, and a variety of industrial design settings while also gaining a highly valued line on their resume. While their academic coursework focuses on learning core skill sets and theory, soft skills, professional expectations, and understanding of the realities of the field are often learned through an internship. Some postsecondary institutions have created a mandate for participating in at least one internship prior to graduation, yet little is known about the impact of a required internship in comparison to programs that prioritize internships but do not have a mandatory internship requirement for graduation. This study of two 4-year comprehensive universities in the United States of America, one with an internship mandate and one without, aims to assess various considerations around internships, including obstacles to participation, the impact of a mandate on if and when students participate in their internships, and how students obtained their internships. The study also investigates the legitimacy and quality of internships.

Keywords: Industrial design education, Internship programs, Mandated internship programs, Educational opportunities, Education and industry

INTRODUCTION

Industrial Design (ID) programs are tasked with preparing students to enter professional practice after graduation. Professional internships, which take place outside of the student's institution, are often seen as supporting student success entering the workforce. Internships are understood to be a way for students to experience work culture, learn soft skills, and experience different industrial design settings that they would not be exposed to in a classroom setting. Students who participate in an internship related to their profession are 14% more likely to find employment in their field (Binder, Bagueley, Crook, and Miller, 2014).

While the benefits of internships are documented for students, there are numerous stakeholders who benefit from student internships. Strong internships can raise the reputation of a school/program, and consistent internships can draw students to the program. Companies that employ interns also benefit, as internships are an excellent recruiting tool with a lower cost on-the-job training period without the risk of having to let go of a full-time employee if it is not a good fit. They also give the company an opportunity to reduce labour costs on lower priority projects. Students also raise the reputation of the employer, sharing their positive experiences with other students, friends and family (Maertz et al., 2014).

Despite internships being highly valued, not all students are able to participate in them. Internship placement is intensely competitive, with employers seeking out students with sophisticated professional work. If upper-level student portfolios don't reflect previous internship experience, job opportunities may be limited. Students' geographic proximity to available internships also greatly impacts their ability to participate. Rising housing costs are prohibitive when students are responsible for maintaining two rents for an internship further than a commuting distance from their primary residence while in school (Barnhart, 2022). Financial considerations make it especially difficult for students to take on an internship that is low-paying or unpaid. Beyond simply not being able to 'land' a job, considerations that make it difficult to pursue an internship include heavy course loads and the need to maintain a full or part-time job. These issues often have an outsized impact on historically marginalized student populations (Hora et al., 2021).

At this time, there is no published data regarding participation in ID internships. This includes a lack of demographic data, how many ID programs mandate an ID internship in order to graduate from their program, and what the effect of ID specific internships are on student education and employment rates after graduation. Therefore, it is necessary to understand the impacts of schools that have a mandated ID internship program vs schools without an ID internship mandate. To do so, this research investigates and compares two 4-year comprehensive university ID programs in the United States of America (USA): the University of Kansas (KU) which has no internship requirement for students' completion of the program and Western Michigan University (WMU) which does have an ID internship requirement for graduation. This study aims to assess various considerations around internships, including obstacles to participation, the impact of a mandate on if and when students participate in their internships, and how students obtained their internships. The study also investigates the perceived value, legitimacy and quality of internships.

This study employed quantitative methods for data collection and analysis. A survey was administered at KU and WMU, and included current 3rd year, 4th year, and graduated students from the prior year. The sample for the survey included ($n = 78$) students, ($n = 43$) from WMU with a mandated internship program, and ($n = 35$) from KU with no internship mandate. This study also included semi-structured interviews of ($n = 8$) students, ($N = 4$) from each institution to understand application rates, internship experiences, hiring process, and perception of value for their education and for their

preparation for employment. This initial investigation is a model for further investigations involving a broader range of institutions and internship experiences.

MEASURES

Predictor Variable

The central predictor variable for this study was university. Participants were asked: What University do you attend? Options included WMU and KU. One participant did not answer, so was excluded from these analyses.

Outcome Variables

This study included four outcome variables of interest. First, participants were asked: Have you participated in an internship since starting in the ID program? Respondents could answer Yes or No. Participants who answered "Yes" were then asked: How did you land your internship(s)? Please select all that apply. Options included: someone personally referred you to the company, you responded to a job/internship posting, you met someone at the company through networking, and another category with an open response. Three respondents provided "other" answers, which were reviewed by Barnhart and Hagins and classified within the most appropriate existing category.

Because this study was interested in investigating the role of social connections in internship placement and program, the responses to this second question were recoded into two categories including: 1) any personal connection involved (including the original responses: someone personally referred you to the company and you met someone at the company through networking) and 2) applied without any personal connection (including the original responses: you responded to a job/internship posting).

The third set of questions focuses on the perceived impact of the internship. Participants were given the following prompt: How would you rank your internship's impact on each of the following? (With 0 showing no impact, and 5 showing maximum impact.). Below the prompt were 3 sliding Likert scales for 1) career/professional learning, 2) benefit to your future, and 3) benefit to your industrial design education.

Finally, among participants who did not report landing an internship, they were asked: Did you Apply for any internships? Responses included Yes and No.

ANALYSIS PLAN

The aim of the analyses was to evaluate the role of the program on landing an internship, how that internship was landed, and perceived impact of the internship(s). In addition, the analyses sought to investigate applications to internships, even if they were unsuccessful. Cross-tabulations between the categorical outcomes and program were conducted and descriptive statistics by program were calculated for the scale variables. Bivariate logistic and ordinary least-squares (OLS) regression were conducted based upon the outcome

variable. For the OLS analyses, the R-squared and effect size (calculated with Cohen's d) are provided.

Several sets of sensitivity analyses were conducted. First, a bivariate multinomial regression using three categories instead of two categories for how participants landed their internships was conducted. In this alternative specification the categories included: 1) only applied, 2) only personal connection, and 3) both applied and personal connection. Second, for the binary outcome variables, Chi-square tests of independence and tests of proportions were conducted. Third, because Likert scale outcomes may not meet the criteria for parametric tests, a Mann-Whitney Wilcoxon rank-sum test was conducted on the variables that used the Likert scale rankings.

FINDINGS

Descriptive Results

Table 1 provides cross-tabulations for the categorical variables (Panel A) and descriptive statistics of the scale variables (Panel B) by program. The cross tabulations show that among the 78 participants, 43 (55%) attended WMU and 35 (45%) attended KU. In total, 52 (66.67%) reported having any internships with 33 (63%) of these students reporting attending WMU and 19 (37%) of these students reporting attending KU. A chi-square test of independence suggested that the number of students who reported internships was significantly associated with their program ($\chi 2 = 4.37$, $p < 0.05$).

All of the participants who reported internships provided details on how they landed their internship. Only applying, without any personal connection or referral, was more common among KU students ($n = 13$ of the 19 KU students with internships) than WMU students ($n = 22$ of the 33 students who reported internships). A chi-square test of independence suggested that program and how students landed their internship were significantly associated ($\chi 2 = 5.97$, $p < 0.05$).

Among students who reported having internships, there were similar median scores on the perceived impact of the internship for all the scales across program (Table 1). Notably, in two of the questions, one of the KU students did not respond and in one of the questions a WMU student did not respond.

Finally, among those who did not have an internship experience ($n = 26$), 9 (35%) did not apply to any internships. Of these 9, 5 attended KU and 4 attended WMU. A chi-square test of independence showed no significant association between program and applying to an internship.

Bivariate Modelling

Table 2 provides the results of the bivariate analyses using regression. Several significant associations were observed, which provide further details to the significant chi-square tests reported above.

First, the likelihood of having any internship was 1.78 times higher for WMU students than for KU students (odds ratio = 2.78, Standard Error = 1.38, $p < 0.05$). Second, among students who had an internship, the

Table 1. Cross-tabulations and descriptive statistics by gender for all outcome variables.

				Chi-Square, p-value
Panel A: Cross-tabulations				
	WMU (n=43)	KU (n=35)	Total (n=78)	
Had Any Internship	76.7%	54.3%	n=52	*
How Participant Landed Internship			n=52	*
Applied Only, No Personal Connection	33.3%	68.4%	n=33	
Any Personal Connection	66.7%	31.6%	n=19	
Applied for an Internship (among those who did not land an internship)	60.0%	68.8%	n=26	ns
Panel B: Descriptive Statistics				
Perceived Impacts	WMU	KU	Overall	
On Career				
Median	4	4	4	
Minimum	2	1	1	
Maximum	5	5	5	
N	27	16	43	
On Future				
Median	4	4	4	
Minimum	1	2	1	
Maximum	5	5	5	
N	27	16	43	
On Education				
Median	3	3	3	
Minimum	0	1	0	
Maximum	5	5	5	
N	26	17	43	

likelihood of having a personal connection compared with applying alone involved in landing an internship was 3.33 times higher for WMU students than for KU students (OR = 4.33, SE = 2.67, $p < 0.05$). Interestingly, however, among those students who had internship experiences, there was no significant association between program and the perceived impact of the internship on career, future, or education.

Finally, there was no significant effect of program on the likelihood of applying for an internship among students who did not report an internship.

Sensitivity Analyses

The sensitivity analyses conducted did not differ substantively from the findings presented above.

INTERVIEWS

To further understand the experiences of our students, informal, semi-structured interviews (n = 8) were conducted with 4 students from each

Table 2. Bivariate logistic or ordinary least squares (OLS) regressions between outcome variables and gender.

	(1) Any Internship	(2) How Landed Internship	(3) Perceived Impact-Career	(4) Perceived Impact-Future	(5) Perceived Impact-Education	(6) Applied for an Internship
University (Ref=KU)						
WMU	2.779*	4.333*	0.102	−0.236	−0.217	0.682
	(1.377)	(1.377)	(1.377)	(1.377)	(1.377)	(1.377)
Constant	1.187	0.462	3.750***	4.125***	3.294***	2.200
	(0.403)	(0.228)	(0.293)	(0.288)	(0.385)	(1.187)
R-Squared	–	–	0.0018	0.0102	0.0047	–
Cohen's *d*	–	7	−0.0868	.205	.137	–
95% CI			−.705−.532	−.416−.824	−.476−.748	
Observations	78	52	43	43	43	26

Models 1, 2, and 6 use logistic regression and exponentiated coefficients are provided. Models 3, 4, and 5 use OLS regression.
Standard errors in parentheses
+p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

participating program, with equal numbers of self-identifying male and female students interviewed. These qualitative interviews were conducted to understand the students' process for finding an internship and their actual experiences if they had or did not have an internship. Students' positive and negative reflections, as well as barriers to participating in internships, were recorded.

Questions that were asked:

- Can you walk through your internship experience?
- How did you find internships, and how many did you apply for?
- Which internships did you apply for? Was it based on…
- Who you know, particular interest in the field, geographic location, financial compensation, or something else?
- How much pressure did you feel to get an internship?

Questions for students who participated in an internship(s):

- How would you describe the hiring process you went through?
- How many interviews did you go through? What were they like? Are there any questions that stood out to you in particular?
- What was your day-to-day experience?
- How many/what sort of projects did you work on? Who did you work with?
- What (if any) value did your internship(s) have for your education?
- What (if any) value did your internship(s) have for your job preparedness?

Questions for students who did not participate in an internship(s):

- Were internships an option for you while studying ID?
- Did you apply for any internships? (how many do you think you applied to)?

- What (if anything) do you think you're missing by not having had an internship?
- Do you have any sense of why you didn't get an internship? Was there anything in particular holding you back? (Geography, finances, time, etc.)
- If you were going to go through the process of applying for internships again, what might you do differently this time around?

Findings from interviews (n = 8)

Importance of Personal Connections

- Personal connections and recommendations were critical for obtaining internships. All students interviewed who participated in an internship (n = 5) obtained their internships through their network and personal connections.
- Mentors simplified and removed barriers for students applying to internships. Mentors would connect students without the students submitting a formal portfolio.
- Students with mentors connecting them to internships did not apply to other internships.
- Professional mentors were the most likely connection for internship placement.

Mandated Internship Experience

- Students who had internships while studying at WMU reflected that they would not have felt as much pressure to have an internship if it didn't impact their ability to graduate from the program.
- The mandate to have an internship encouraged WMU students to look for internships in their sophomore year so they could get it over with and not have that worry.
- Students at WMU felt that the school had an obligation to help them find internships, while students at KU reflected it was their responsibility to find internships.
- Students were sometimes unclear as to what counted as an internship experience, which added stress and concern that they would not graduate on time.

Internship Opportunities in Proximity to Industrial Design Program

- The students were looking for internships near their housing for school. Not having to pay for two housing locations during the internship was a factor in their ability to participate in an internship.
- Being able to temporarily live with family or friends made it possible to take on an out-of-town internship.
- Actual choice was limited in the internship application process; students were generally inclined to quickly accept an internship offer, especially when the offer was extended later in the academic semester.

Confidence Through Internship Experience

- Having internships improved students' confidence and they were more comfortable submitting their portfolios to other internships or professional positions if they are graduating.
- Students who did not participate in an internship felt less confident than their peers with internships, even if they were not able to participate due to costs or other issues, not because they did not have the same skill sets as their peers who were able to participate in internships.
- *Value of Internship Experience*
  Internships are highly valued even if they aren't found to be valuable. Students reported that they thought having an internship on their resume was critical in their ability to find full time employment after graduation even if they reported that the internship was not beneficial to their education or prepared them for the profession.
- Students feel unsupported when not assigned a manager, or when their assigned manager is often unavailable.
- Despite the lack of a mandate at KU, students described internships as 'de-facto required,' suggesting the perceived value of the experience for their industrial design education.

CONCLUSION

Internships play a pivotal role in supporting students' success in entering the ID workforce. This research reflects the importance of program support of students finding internships. ID programs with a mandate for internship participation had a higher rate of students participating in internships. Students at WMU, which has a mandate for students to participate in an ID internship prior to graduation, had a higher rate of internship participation than ID students at KU, which does not have an ID internship mandate. These findings were reiterated during qualitative interviews. The authors believe this discrepancy is worth considering if contemplating an internship mandate for ID programs.

Consistent feedback from our research included the importance of location and proximity of opportunities for students to be able to participate in internships. In our interviews with students all KU students indicated an interest in a remote position, while all students from WMU reflected the need for a local position. Even though all students who completed the survey had paid internships, it was reported that it was a considerable financial burden to be responsible for housing in two locations, enough where students were not participating in internships outside of driving distance to their place of residence. More KU students participated in remote internships than WMU students as they had less opportunities in proximity to campus. Programs should also consider the need to provide support for students if they mandate internship participation. Students spoke of a need for support starting their sophomore year. Professional mentorship programs were beneficial in connecting students directly with opportunities which led to internships. The importance of mentorship in the success of ID students entering the workforce would be worth investigating further in a future study.

In our interviews, students who already had stronger ID skill sets including sketching, Computer Aided Design (CAD), and research skills found internships more easily. This suggests that there are a number of ways programs can support students in the internship process, including personal networks, but just as important is ensuring that their baseline skills are competitive. This research indicates a need for further investigation into how to better provide support for all students and their search for internships.

There is merit in continuing this investigation in:

- How educational institutions define industrial design internships
- Assessing how gender and race impact experiences and barriers in internships
- Expanding to other geographic areas, collecting data from additional academic institutions and industrial design firms
- Assessing portfolios submitted to open positions
- Interviewing industrial design hiring managers and assessing what they value in student applications and what their goals are in having interns.

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