

# APPLICATION GAP: UNEVEN GENDER PARTICIPATION IN INDUSTRIAL DESIGN INTERNSHIPS

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## ABSTRACT

Female Industrial Design (ID) students are not joining the ID work force at the same rate as their male peers. There are equal numbers of males and females studying ID, however, women make up only 31% of the industry. The author hypothesizes that internship participation has a snowball effect on student success and ultimately in their ability to join the ID work force at the same rate as their male peers. With student application rates during the first and second year of the programme leading to a higher rate of application and acceptance to internships in their 3rd and 4th years of study. This paper presents a research study conducted over two years at the University of Kansas showing the application rates of male and female identifying students from their 2<sup>nd</sup> through 4<sup>th</sup> year of study, their perceptions of portfolio readiness, and how internship application and placement rates affect employment rates post-graduation. Student surveys and semi-structured interviews were conducted with 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> year students 2 months post-graduation to understand the application rates, how students perceived the importance of applying to internships, how their perception of their portfolios affected their application rates and the effect internships had in entering industrial design practice. Interviews were conducted with industrial design managers from eight companies with competitive internships. This initial investigation at the University of Kansas is a model for further investigations at other institutions and professional practice.

*Keywords: Industrial design, diversity in design, gender, design education*

## 1 INTRODUCTION

A goal of Industrial Design (ID) education is to prepare students for placement in professional practice regardless of gender. However, while there are an equal number of male and females enrolled in ID programmes [1], only 31% of women are moving into the ID profession [2]. While other similar disciplines, such as architecture and engineering, are investigating gender disparities in their fields, ID has produced very little research in gender equity. Through understanding where the gender gap is perpetuated in academia and in industry, we can begin to address equity in ID pedagogy, ensuring we meet the needs of all students and increase female participation in professional practice.

## 2 BACKGROUNDS: LITERATURE REVIEW

Women are currently not moving forward from education into ID practice [2], which is problematic for a field fuelled by innovation[3]. Homogeneous teams have been shown to be less innovative and hold back critical thinking [4]. Diversity brings in a range of ideas and life experiences, while hiring managers are often looking for a candidate who would be a good cultural fit, which often means someone who looks like them, has a similar life experience, and skillsets [5]. This leads to hiring candidates who will not challenge the norm or bring differences of opinion, leaving out a critical part of the creative process of divergence [6, 7, 8].

Researchers have been investigating why women are not applying to design jobs, in the 1980's Bruce noticed there was a lack of women applying for jobs in industrial design [3]. She speculated that terms in application materials such as (industrial, mechanical, technical, manufacturing") have masculine tones and contribute to male dominate atmospheres in the profession [3]. Women often feel the need to prove themselves in our field, they feel they are not taken seriously and must work harder than those around them [9]. However, there are a lack of women in design management positions [10] so regardless

of how much they work, women are not seeing their peers in leadership. When women are in leadership positions it helps other women stay motivated and encouraged to continue in the profession [9]. Internships are a valuable pathway for students to enter full time employment in professional practice. Students who have internships are perceived as being ready to enter the workforce, with students receiving 14% more offers if they have internships than those who do not [11]. There is a lack of research investigating if there are gender disparities in application or placement rates in industrial design internships. This research investigates the gap of women progressing into the field of industrial design and how it relates to student internship rates. I hypothesize that female students are not applying at the same rate as their male counterparts and the lack of gender diversity in the field may be contributing to the disparity.

### **3 RESEARCH METHODS**

The lack of data and previous literature regarding males entering the field of ID at a greater rate than their female counterparts led to the following two assessments. The first was to investigate if males and females were applying to internships at the same rate early in their education, during their 2<sup>nd</sup> and 3<sup>rd</sup> year. The second was how many males and females were participating in ID internships at each year of their education. To study this, over a two-year period 2<sup>nd</sup>, 3<sup>rd</sup> and graduating 4<sup>th</sup> year students (n=106) participated in a survey asking the following questions: the number of internships students applied to, if they participated in an internship, their perceptions of their industrial design portfolios, and confidence levels in their work. Informal, semi-structured interviews (n=18) were conducted with 6 students from the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> year at the University of Kansas, equal numbers of self-identifying male and female students were interviewed. These qualitative interviews were conducted to understand the scenarios in which students were or were not applying for internships and synthesis with quotes for understanding what students are experiencing while considering participating in internships and jobs. Students' positive and negative experiences, as well as barriers to participating in internships were recorded. Interviews were conducted with (n=8) industrial design hiring managers from a variety of industrial design specialties including (n=5) product design, (n=2) UX/UI, (n=1) Colour Materials and Finish (CMF) design, with a gender breakdown of (n=7) males and (n=2) female in the authors country of origin. The findings from these quantitative and qualitative investigations show disparity in confidence levels in men and women's portfolios, how this perception effects application rates to internships, and the impact this has on employment post-graduation.

### **4 FINDINGS**

The research reflects the unproven anecdotal notion that in industrial design academia male students are applying to and receiving more undergraduate internships than their female counterparts, which leads to a higher placement rate of employment. This was shown through the surveys and interviews with students and employers.

#### **4.1 Application and placement rates**

The survey of student's application rate for internships, to see if there was differentiation in application rates by year and gender proved what students and professionals had perceived. At the University of Kansas gender is a factor in internship application rates, 45% of 2<sup>nd</sup> year females applied to internships, with 9% of female 2<sup>nd</sup> years receiving an internship between their 2<sup>nd</sup> and 3<sup>rd</sup> year. 67% of male second years applied to internships with 38% of male 2<sup>nd</sup> years receiving an internship between their 2<sup>nd</sup> and 3<sup>rd</sup> year. These trends continued into the 3<sup>rd</sup> year. More female students had internships than in the 2<sup>nd</sup> year, however, the rate of internships for the male students continued to improve as well, continuing the gender disparity. A total of (n=16) out of (n=32) or 50% of 3<sup>rd</sup> year students had internships at some point between their spring semester of 3<sup>rd</sup> year and spring semester of 4<sup>th</sup> year, with 30% of the females participating in internships and 63% of the males.

After assessing the data further, the author found that applying to internships during the Sophomore year was beneficial, 85% of 2<sup>nd</sup> year students with summer internships received internships during or after their 3<sup>rd</sup> year, showing those who received internships were much more likely to be successful in finding a competitive internship later in their education.

The survey of students two months after graduation assessed if students gained full time employment or an internship in industrial design. A greater percentage of men found internships or employment than women, 69% of men and 50% of women.

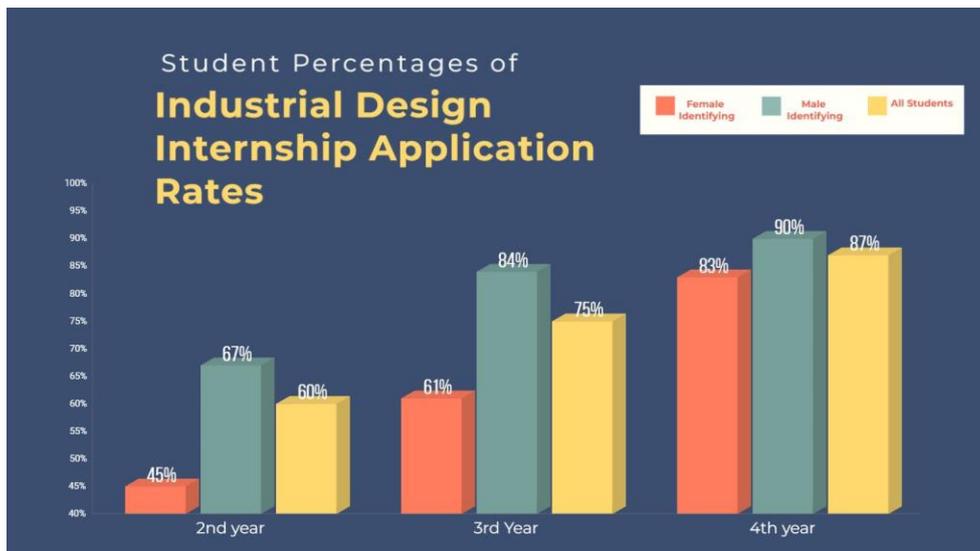


Figure 1. Internship & employment application rates

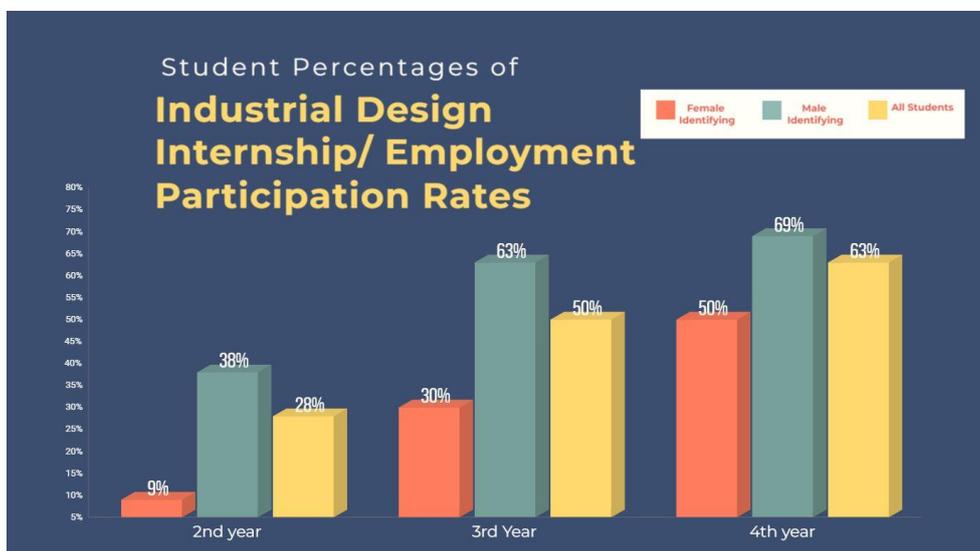


Figure 2. Internship & employment participation rates

#### 4.2 Gender disparities

The interviews and surveys found that student's confidence in their portfolios related to how many internships or positions they applied to. In these interviews when asked why they did or did not apply to internships women were more likely to mention others telling them not to apply, that their work needed to be more polished, making them feel more unconfident and unsure. The three 2<sup>nd</sup> year females were told they were not ready to apply by upperclassmen, while one of the three 2<sup>nd</sup> year males were told the same, none of the students who were told their work was not ready applied to any positions. There was a consistent concern among all of the students of submitting applications and having reviewers remembering the students work if it wasn't good enough and being judged in the future, this also contributed to students not applying to internships. Students felt more comfortable applying to positions when members in their social group were actively applying. 3<sup>rd</sup> year students felt more comfortable applying after seeing their peers apply and seeing more of their peers' portfolios. Interestingly, a majority of students (72%) did not use their portfolio created in their 3<sup>rd</sup> year portfolio course but did see a benefit to having the course offered because it helped them prepare their resume and they used the areas covered in their portfolios they created outside of class.

Social media caused considerable stress, students compared themselves to the work posted on sites such as Behance and Instagram, where highly polished sketching skills and Keyshot renderings are often showcased. More male students than female students find sketching and Keyshot as engaging as other

skillsets and female students were less likely to resonate with those sites or feel as though their work belonged. Female students were more interested in a broader range of skillsets, which include sketching and Keyshot, but also include research UX/UI, Colour Materials and Finish, and soft goods design. Financial constraints were also an issue for students, a majority of the students at the University of Kansas live off campus and pay for rent during the summer. Students then have to pay for housing at two locations, even with a paid internship the housing costs are high enough to be a barrier to being able to participate in an internship at another location. This exacerbates financial inequities, wealthier students with outside support are able to participate while less wealthy students are not. Students who participate in athletics are also unable to participate in internships, many of whom have scholarships funding their education and have obligations outside of school throughout the academic year and the summer.

After graduation women were more likely to find positions in a broader range of the industrial design field than their male peers, including exhibit design, soft goods design, colour, materials & finish design, UX/UI, and design research. Their portfolios overall tended to have a larger range of product categories, which (according to feedback in professional portfolio reviews) made professionals less likely to see them as being successful in whatever category the professional worked in. The female students who were interviewed were aware that having a broader range of work was seen negatively by some portfolio reviewers. Women closed the gap for fewer internships in their second and third year to some extent, but still were less likely to find employment in ID than males in their cohort.



Figure 3. Application perceptions

**4.3 Industrial design managers**

Interviews with design managers revealed that teams have more success hiring women when the interview teams are multi-faceted and have some diversity already in the studio. Design managers from hard goods product design gave feedback that women’s portfolios will sometimes have a broader range of work including graphics, UX/UI, or soft goods, which they interpreted as the candidate would not be a good fit for their workflow, even if their hardgoods design skills including sketching, CAD, and iterative prototyping were strong. It was difficult to find women design managers to interview, for example in our region there are only male design managers. All the hard goods design managers interviewed stated there were around 20% female applicants for open positions, while UX/UI and research reported an equal number of applicants and CMF had 70% female applicants.

**5 DISCUSSIONS**

Reviewing the data and the interviews, it is apparent that women do not see themselves fitting in with the field of industrial design as strongly as their male counterparts. There were consistent references to their portfolios not looking “ID enough” and discounting the work they had done even though it fits inside of industrial design practice. This contributes to a lack of confidence in applying and assuming they will not be taken seriously if they do. Social media perpetuates these feelings by consistently showcasing a narrow view of industrial design focused on a specific style of sketching and high-quality photo like renderings in Keyshot. This brings to question how faculties speak about industrial design work and value in early studios, the areas of industrial design that students may not perceive as valuable are the growing industrial design areas of research, UX/UI, and colour materials and finish (CMF).

Employers should also look at the entire body of work if they are interested in hiring a diverse industrial design group, if the candidate has strong hard goods product design skills and also shows interests in other areas of industrial design that should not diminish their ability to succeed in a position. To promote gender equity in the field schools should consider mandating all students apply for internships their second year and look to provide scholarships for summer housing in locations away from campus. Even if students are unable to participate in the internships, students consistently stated how applying for internships made them more confident in their portfolio and motivated them to update their work, so it was more competitive. When these updates began during their second year their portfolios were more refined by their final year in comparison to their peers who only started applying during their final year in the programme. This would decrease the current barriers to entry.

## 6 CONCLUSIONS

This study showed that starting the application process for industrial design internships during the second year greatly impacts the success of the student. Even if they aren't accepted for internships their second year they are more likely to apply to more internships further down the line, but not applying at all assures not having critical internship experience. Professionals are looking for sophisticated professional work from graduating seniors, without extra work from internships it is hard to be competitive. Currently professionals who are hiring are looking for cultural fit and for designers who will need minimal training. Cultural fit can often lead to hiring practices with a bias towards individuals who resemble the hiring manager or team in both personality, skillsets, culture, sex, and race. There is merit in continuing this investigation forward in:

- Expanding to other areas of the country, collecting data from other academic institutions and Industrial Design firms
- Expanding into other categories of Industrial Design, specifically the demographic makeup of UX/UI and design research
- Assessing portfolios submitted to open positions
- Reviewing portfolios for bias based on gender and or race

Having a quantifiable understanding of where there is a lack of pedagogical equity will assist in addressing the gender gap in professional practice.

## REFERENCES

- [1] Coroflot, (2021) *Design Salary Guide United States*.
- [2] IDSA, (2021) *2021 Membership Findings Report*.
- [3] Bruce M. A Missing Link: Women and Industrial Design. *Design Studies*, 1985, 6(3), 150-156.
- [4] Scott Page, *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools and Societies*, Princeton University Press, 200.
- [5] Schneider B., Smith D. B., Taylor S. and Fleenor J. (1998). Personality and organizations: A test of the homogeneity of personality hypothesis. *Journal of Applied Psychology*, 83(3), 462–470.
- [6] Dezsö C. L. and Ross D. G. Does Female Representation in Top Management Improve Firm Performance: A Panel Data Investigation, *Strategic Management Journal*, vol. 33, no. 9, September 2012, pp. 1072-1089.
- [7] London Business School, *Innovative Potential: Men and Women in Teams*, 2007.
- [8] Desvaux G., Devillard-Hoellinger S and Meaney M. C. (McKinsey & Company), *Business Case for Women*, *The McKinsey Quarterly*, September 2008. (The analysis derived from a survey of 115,000 employees at 231 private and public companies around the world. The nine dimensions of organizations are leadership, direction, accountability, coordination and control, innovation, external orientation, capability, motivation, work environment and values.)
- [9] McMahon M. and Kiernan L. (2017). Sisters are doing it for themselves? Exploring Gender in Irish Product Design Education. In *DS 88: Proceedings of the 19th International Conference on Engineering and Product Design Education (E&PDE17), Building Community: Design Education for a Sustainable Future*, Oslo, Norway, 7 & 8 September 2017.
- [10] *Design Council UK*. *The Design Economy: The State of Design In the UK*. Feb. 2018.
- [11] Nunley J. M., Pugh A., Romero N. and Seals R. A. College major, internship experience, and employment opportunities: Estimates from a résumé audit, *Labour Economics*, Volume 38, January 2016, pp. 37-46.