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THE FEMALE STUDENT EXPERIENCE AT WORCESTER POLYTECHNIC INSTITUTE (1965 - 1980):

UNCOVERING DISCRIMINATORY PRACTICES AND
IDENTIFYING CHALLENGES

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WPI

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Women pictured on the cover: Nancy Wood (Left), Lesley Small (Middle), and Beth Poulin (Right) ([Untitled image of 3 WPI female students], 1972)

ABSTRACT

Past exclusion of women from the student body has driven contemporary efforts to support female students at WPI, but there is a lack of critical understanding of the channels through which female exclusion has occurred historically. Inspired by Dr. Stephan Sturm of WPI, this project uncovered discriminatory mechanisms at the school and documented the experiences of female students between 1965-1980. A qualitative analysis was conducted on data gathered from WPI's Archives & Special Collections and 41 interviews with WPI alumni, faculty, staff and MIT alumnae.

Material and social mechanisms of exclusion at WPI were identified. Across all interviews the most prominent issue female students faced was lack of housing and inadequate infrastructure. Unrenovated restrooms and limited social spaces made the integration of women on campus more difficult. Unfair methods of assessment, limited number of organizations for women, and lack of mentorship on campus stood out as formal social mechanisms of discrimination. These mechanisms put women at a disadvantage when pursuing their academics and interests. Some of the informal social mechanisms discovered include sexist comments, harassment, a sense of not belonging and the heightened pressure to excel. The social mechanisms identified, and the extent to which they were felt, were not universal to all students during the 1965-1980 period.

The female experience at MIT shared many characteristics as that at WPI. Despite MIT admitting women over a century prior to WPI, interviewees still endured sexism and feelings of isolation. Women at both universities were often one of the only female students in class and had limited female mentorship within the faculty. However, both groups of women found support among each other and through organizations. These findings promote further discussion of this topic at WPI and provide future teams with resources to examine exclusion of other underrepresented groups.

This report represents work of WPI undergraduate students submitted to the faculty as evidence of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review. For more information about the projects program at WPI, see <http://www.wpi.edu/Academics/Projects>.

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THE GENDER GAP IN STEM

Women are poorly represented in science, technology, engineering, and math (STEM) fields at American universities. In 2014, the National Science Foundation reported that out of all the U.S. undergraduate degrees achieved in the fields of computer science, engineering and physics, less than 20% were earned by women (National Science Foundation, 2014a). In 2006, about one third of first-year undergraduate males pursued a major within the STEM field, in comparison to only 15% of all first-year undergraduate females (Hill et al. 2010). A survey conducted on students aged 8-17 found that 24% of boys were interested in pursuing a STEM career, meanwhile only 5% of girls reported the same (American Society for Quality, 2009). Inequality within higher education towards women drives the gender split in the STEM field. Based on Barron's Profiles of American Colleges selectivity data, some of the most-competitive institutions value specific criteria that only benefit male applicants, such as SAT scores, over other parts of the application (Bielby et al., 2014). Women face poorer pre-college academic prep, applicant pool bias, and admissions policies that favor men (Bielby et al., 2014). Because of this, women are less likely to pursue male-dominated fields, such as STEM (Bielby et al., 2014), contributing to the gender split we see today.

Gender discrimination prevailed in Worcester Polytechnic Institute's (WPI) history. Since its founding in 1865 as the third-oldest private technological university, WPI's mission has been to educate and prepare young people who are interested in pursuing a STEM career (WPI History, n.d.). Founders John Boynton, a highly respected tinware manufacturer, and Ichabod Washburn, owner of the country's largest wire mill located directly in Worcester, combined both of their visions to create a unique approach towards education in order to develop students into successful engineers (WPI History, n.d.). Men dominated engineering at the time as society considered women unfit for the field. Women were expected to become housewives and mothers, not to pursue an education (Rose, 2015). WPI remained a male-only university for its entire first century. The university confronted this

ingrained discriminatory practice when the Board of Trustees voted to admit women in February 1968. That fall, the first two women undergraduate students enrolled. Over many years WPI increased women's enrollment. The percentage of women reached 20.7% in 1995, 30% in 2010, and 40% in 2019 (Enrollment, 2020). However, the challenges women and advocates had to overcome to increase their presence are not discussed.

Gradually WPI is becoming an inclusive environment for women and other students. University-wide initiatives such as Project Inclusion which started in 2017 and the Bias Response Program which started in 2020 promote inclusion on campus (Diversity & Inclusion, n.d.). Women pioneers are recognized and celebrated during women's heritage month, and at milestones such as Laurie Leshin's inauguration as the university's first female president. Despite these advances, the experience of women at WPI has not been extensively investigated. Little has been written about the discrimination these women pioneers endured and sought to overcome at WPI.



Figure 1: Female student carrying suitcases (Worcester Polytechnic Institute, 1970)



Figure 2: Freshman vs Sophomore Tug-A-Rope (Worcester Polytechnic Institute, 1970)

Analyzing the experiences of the first cohorts of female students admitted to WPI revealed newfound knowledge regarding inclusion and how to address discriminatory practices. Taking on this historical perspective created a deeper understanding of the attitudes towards women in engineering schools and WPI's evolution in terms of inclusivity. Our goal was to critically examine gender discrimination prevalent at the university from 1965 to 1980 and to identify how women challenged the misconceptions against them. This selected time frame encompassed the years prior to the admission of women at WPI (1968) and the immediate years following the first graduating class that included women; allowing for examination of the attitudes and actions that influenced WPI's decision and those that came as a result of the decision. Gender discrimination was viewed on a binary level as that was the prominent

viewpoint during this time period. All archival data was also based on binary categorizations of gender due to the limited amount of available data sources.

Through archival research and in-depth key informant interviews with alumni, faculty, and staff members, we gained insight into the personal experiences of the first women at WPI as well as examined the structural systems in place that impacted their experience. Identifying and acknowledging the practices that perpetuated or dismantled gender discrimination created a better understanding of why that discrimination occurred in the first place. With this understanding, WPI is better equipped to promote inclusivity through implementation of preventive actions and a more thorough understanding of other current forms of discrimination.

BENEFITS OF IMPLEMENTING DEI INITIATIVES IN HIGHER EDUCATION

DEI initiatives in higher education institutions contribute to a welcoming environment for all students and the development of long-lasting skills which they can utilize in their personal and professional lives. A study conducted by Gurin, Dey, Hurtado and Gurin in 2002 examined the impact of diversity in a college or university setting on students' educational outcomes. This study used a national sample of African American, Asian American, Latino/a and White college students (Gurin et al, 2002). It concluded that diversity in a college setting promoted students' learning (e.g., active thinking skills, intellectual motivation, academic skills) outcomes and democracy (e.g., perspective taking, racial understanding, cultural understanding) outcomes (Gurin et al, 2002). These outcomes support students' academic growth but also their social growth. The largest contributor to the promotion of these outcomes was informal interactional diversity (see Figure 3) which is defined as "informal interactions with racially diverse peers" that can occur outside of the classroom in settings such as residence halls and campus events (Gurin et al, 2002). Informal interactional diversity proved more influential in the development of these outcomes than classroom diversity (see Figure 3 for definition). Gurin et al's study supports diversity in a college setting as it leads to the development of new skills for students.

Jayakumar (2008) extended the framework set by Gurin et al. This study examined the relationship between the development of post college skills, and the structural diversity, interactional diversity and campus racial climate (see Figure 3) present at colleges and universities. The post college skills, or workplace competencies, evaluated in this study include pluralistic orientation (see Figure 3 for definition) and leadership skills.

The purpose of this study stemmed from the belief that cross-functional skills that employers look for such as leadership, teamwork and problem solving,

come from greater access to diverse peers (Neman, Couturier, & Scurry., 2004, as cited in Jayakumar, 2008). Jayakumar used a sample of white undergraduate students, who come from both segregated and diverse precollege neighborhoods, to determine how diversity in their higher education institutions directly or indirectly influences the development of these workforce competencies. This sample was chosen because white students are least likely to have been exposed to diverse peers before entering the workforce and come from the most racially segregated neighborhoods and schools (Jayakumar, 2008). The results of the study concluded that structural diversity in higher education fosters pluralistic orientation among white students which indirectly leads to a positive campus racial climate. This positive climate leads to more cross-racial interaction which leads to the development of leadership skills among the white undergraduates in their post college years.

The studies conducted by Jayakumar and Gurin et al promote diversity within higher education because of the lasting benefits provided to the students. Benefits include skills such as active thinking, perspective taking, pluralistic orientation, etc. Both of these studies focus on diversity related to race and Jayakumar's study focuses only on the benefits provided to white students. However, they both provide a framework on the importance of diversity and its contribution to a campus environment beyond just creating a more inclusive environment. DEI initiatives can be especially beneficial in STEM higher education institutions such as WPI which place a strong focus on engineering. The engineering field has historically been for males, and women who pursued the field faced misconceptions and unwelcoming campus environments. This resulted in a significant disparity between the number of men and women pursuing the field. In 2019, for instance, only 13% of engineers were women in the U.S. (Ricon, 2019). WPI, along with other universities, have taken steps to implement DEI initiatives which give more students, especially women, access to higher education in the STEM field.

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Figure 3: Different DEI Terminology

a: Gurin et al (2002, p.332-333). b: Gurin et al (2002, p. 333).

c: Gurin et al (2002, p.333). d: Case Western Reserve University (2018, p.1). e: Jayakumar (2008, p.618).

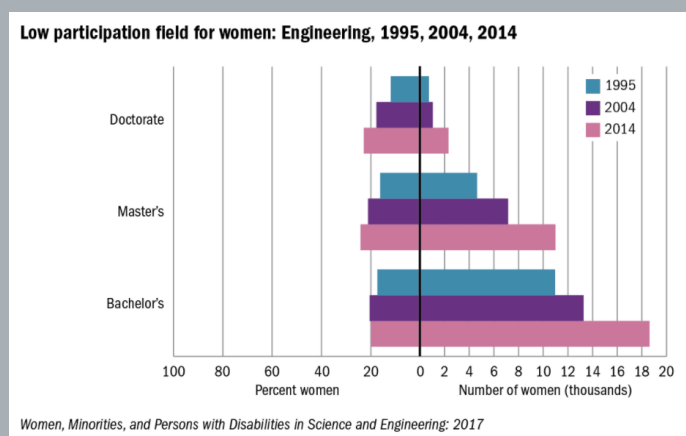


Figure 4: Percentage of women earning engineering degrees. From *Women, Minorities, and Persons with Disabilities in Science and Engineering by NSF*, January 17, 2017. Retrieved April 30, 2021 from <https://www.nsf.gov/statistics/2017/nsf17310/digest/fod-women/engineering.cfm>. In the public domain.

ATTITUDES, IMPACTS AND RESULTS OF WOMEN IN ENGINEERING

CAMPUS CLIMATE FOR WOMEN IN ENGINEERING FROM 1940 TO 1970

Historically, there have been fewer women than men in the engineering field due to the unwelcoming environments women faced at their universities. Up until the late 1960s less than 1% of students in the United States studying engineering were women (Bix, 2004). Women's involvement in the field increased over time, but still less than 20% of the bachelor's degrees in engineering were earned by women from 1995 to 2014 (see Figure 4) (NSF, 2017). This low percentage of women in the engineering field, especially in the mid-1900s, is attributed to the strong masculine connotations associated with the field of engineering (Bix, 2004). Masculinity became tied to engineering in the 19th century when engineering credentials were acquired through on-the-job work in places such as machine shops and railroad yards; all of which were deemed inappropriate for women (Bix, 2004).

The belief that engineering was a masculine field carried through the years and the effects of which can be seen in engineering focused schools; two examples are Massachusetts Institute of Technology (MIT) and Lehigh University.

In 2000, Amy Sue Bix, a professor in the history department at Iowa State University, conducted a historical case study on MIT. The results illuminated the negative perceptions men at the school had of women and how those beliefs encouraged discriminatory actions and added pressures. For example, in a 1941 handbook, President Karl Compton welcomed students through this statement: "In choosing MIT, you've taken on a man-size job, and it will take a man-size effort to get it done" (Bix, 2000, p. 25). In 1947, the Dean of Students described MIT as a school that "prepare[s] men for particular fields of

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engineering...to educate...men for self-reliant, responsible, cooperative citizenship” (Bix, 2000, p. 26). During the 1960s, women were deemed “incompetent, unnatural and intruders” (Bix, 2000, p. 30) by their male counterparts and were only on campus to bring “pleasure and ornamentation” (Bix, 2000, p. 27). These attitudes influenced actions such as social events tailored specifically towards male students, a more selective admissions process for women, and an absence of female role models in faculty positions (Bix, 2000). These attitudes also enforced the expectation that women had to be perfect and better than average; making sure to leave a good impression and avoid being seen as a nuisance (Bix, 2000).

Similar attitudes and actions were seen at Lehigh University, a school whose strengths lie in science and engineering. Asa Packer founded the school to develop human capital for the railroad and steel industries, industries that excluded women (Forcier, 2004). In a brochure for the university, there was a picture with the caption, “A Man’s college” (Forcier, 2004). In 1939, 69 percent of the students voted against the university becoming coeducational. Thirteen years later, in 1952, the male identity at the school was further enforced through its marketing piece: “Presented in a man’s way in a man’s world” (Forcier, 2004, p. 163). Any idea of admitting women

into the school was to help prepare men for marriage and improve the prestige of the school; neither alternative was to benefit women themselves (Forcier, 2004).

In 2019, Ettinger, Conroy and Barr II conducted a study that evaluated the responses of women who studied engineering in the 1970s. One of the questions asked involved the identification and explanation of the challenges these women faced while studying in a male dominated field. The most frequent challenge identified was “not getting respect from peers, not being taken seriously, not being heard, not having people believe that women can be engineers, and having to prove yourself repeatedly” (Ettinger et al, 2019, p.225). The second most frequent challenge was “feeling left out, isolation, being an oddity...being left out of old boys’ networking” (Ettinger et al, 2019, p.226). Since women were perceived to be less qualified even while performing as well as their male counterparts, they had an added layer of work to prove themselves competent. The responses collected in this study support the attitudes and perceptions women at MIT and Lehigh in the 1940s to the 1970s also faced. The impacts of these attitudes and perceptions will be explored in the following sections.



Figure 5: Students in class at WPI
(Worcester Polytechnic Institute, 1975)

REASONS BEHIND LOWER GRADUATION RATES FOR WOMEN IN STEM

The discriminatory attitudes towards women and the lack of financial and peer-to-peer support available to them caused lower graduation rates for female engineering students compared to their male counterparts. Women were set up for failure from the start as families believed that spending money on a daughter's education was a waste since they would quickly exit the labor force to get married and start a family (Rose, 2015). Universities would award fewer scholarships to women and overtime women were at a greater risk of debt due to their education than male students (Rose, 2015, Pyne & Grodsky, 2020). A study published in 2019 used a sample of 562 undergraduates pursuing a STEM field from 27 different universities and investigated the rate of retention within STEM based on a student's gender (Park et al., 2020). The results reported that men were more likely to stay in STEM in comparison to their female counterparts; the male retention rate was 64.2% out of 282 men in comparison to 55.4% out of 280 women (Park et al., 2020).

A 2004 study, published by Zhang et al about 87,000 engineering students at 9 universities in the United States, concluded that men were more likely to graduate from engineering programs than women. Factors such as high school GPA and SAT math scores are in men's favor and were significant in determining graduation rates (Zhang et al., 2004, Bielby et al., 2014). Women were given admittance into engineering universities such as MIT and Lehigh but did not have the same amount of support available as their male counterparts. This lack of peer-to-peer and financial support was not only exemplified through the low retention and graduation rates of women in the STEM fields, but it also took a negative toll on women's well-being.

NEGATIVE IMPACTS ON WOMEN'S WELL-BEING DUE TO DISCRIMINATION

The social identity of women at engineering schools are hurt by the misconceptions spread prior to their admittance. This threatens their well-being and value as an engineering student. Situational cues, which are cues in an environment that signal to an individual that they are threatened or that something may occur, have been found to target an individual's experience and ultimately decrease their performance, even academically (Murphy et al., 2007). The stereotypes, stigma, and underrepresentation of women at engineering schools causes women to feel as though they do not belong and avoid pursuing STEM fields (Murphy et al., 2007). A psychological report was conducted with a sample of 25 male and 22 female STEM undergraduates from Stanford University to investigate the effects of situational cues (Murphy et al., 2007). Participants were shown videos from a Stanford University leadership conference showcasing a gender-balanced crowd and a gender-unbalanced crowd during which different psychological sensors were recorded (Murphy et al., 2007). The findings reported that women had a greater heart rate and skin conductance response, or an increase in electrical conductivity of the skin when stimulated (Dawson et al., 2011), when shown the gender-unbalanced video in comparison to women shown the gender-balanced video; men had no significant effect while watching either video. The skin conductance response often occurs when an individual anticipates a negative outcome from their decision making or the situation they are in (Dawson et al., 2011). It was also found that women felt a weaker sense of belonging and lower desire to attend the conference when watching the gender-unbalanced video (Murphy et al., 2007). The STEM field is a gender-unbalanced environment in favor of men, which can be detrimental for women and their well-being.

A primary concern is whether harassment, situational cues, microaggressions, stereotypes, and other forms of discrimination evolve into even bigger problems. An example of stereotyping occurred at Georgia Tech around the time it began admitting female students. The university's humor magazine published cartoons of women injuring themselves on engineering equipment and joining the men in skinny dipping in swimming pools (Bix, 2004). Microaggressions are "brief and commonplace daily verbal, behavioral, or environmental indignities, whether intentional or unintentional, that communicate hostile, derogatory, or negative . . . slights and insults" (Sue et al., 2007). A project explored the correlation between gender microaggressions and experiences of sexual harassment and assault. Women reported feeling like men would tie their worth to their ability to serve men sexually, even in an academic setting (Gartner, 2019). The participants described stories of catcalling, groping, luring, and even one participant spoke about a time where a classmate assumed she used her body to get an advantage in her academics (Gartner, 2019). These trends of misconceptions can put women at risk to different forms of harassment. In order to combat issues women faced, universities began providing more opportunities and resources for their female students.



Figure 6: Stanley McCormick Hall
(Massachusetts Institute of Technology, 2007)

INCLUSION OF WOMEN AT ENGINEERING INSTITUTIONS

Engineering universities made many changes to overcome the exclusion of women including new dormitory arrangements, creating mechanisms of support, and implementing initiatives. A significant aspect to increasing women's admittance and inclusion at institutions involved the ability to house female students. Increased housing for women helped improve their access to the universities. In 1966, Rensselaer Polytechnic Institute (RPI) reserved one wing of the new residence hall for women so that they could reside on campus rather than use Russell Sage College facilities or live off campus. MIT opened a women's dormitory in 1945 and housed 14 female students. The amount of women's housing at MIT continued to grow and in 1967 the women's dormitory, Stanley McCormick Hall, could house 255 female students. Women's dormitories were an important step to the incorporation of women on campus. However, restricting women to specifically reserved women's housing limited the number admitted. In 1970, MIT lifted the limitation on the number of women admitted into the school by permitting coed dormitories. The Tech, a student newspaper at MIT, explained "previously the Admissions Office had placed an upper limit on the number of women accepted, a boundary set with an eye to the space available in McCormick Hall" (Makowski, 1970).

University committees also helped women's inclusion by evaluating the campus environment towards women and promoting changes. Many recommendations contributed to improvements as the universities executed these ideas. For example, in 1970, MIT accepted the Ad Hoc Committee on Women's Admissions' recommendations. Admissions became gender-blind with no limitation on the number of women admitted, which significantly increased the number of female undergraduates (AMITA Timeline, 2021). In some cases, the committees demonstrated the universities' need to repeatedly reevaluate and make improvements. In 1971, the surprise resignation of Emily Wick from Associate



Figure 7: Female student surrounded by men (Worcester Polytechnic Institute, 1968)

Dean for Women “sparked an examination of the situation of women at MIT undertaken by the women themselves” which resulted in the Ad Hoc Committee on the Role of Women at MIT (Giguere, 1972). This committee investigated “undergraduate admissions and financial aid, graduate admission, academic life, the Dean’s office, extracurricular activities, academic housing, the Wellesley exchange, medical care, childcare, and employment” (Giguere, 1972). Similarly, in 1983, due to problems with sexual discrimination and harassment, RPI established the Task Force on Women Students and Institute Environment to examine the campus climate towards women and identify improvements. This prompted the creation of Women Student Services. Then in 1988, RPI formed the Women in Technologies Initiatives plan which focused on “personal development, professional development, counseling, enrollment management, and the campus environment” (Women at Rensselaer, 2021).

Administrative positions and organizations dedicated to women offered further support and mentorship. Positions focused on a variety of areas including advising and enrollment. The Dean’s Office of MIT, in 1931, established the position of Advisor to Women Students and appointed Florence Stiles because female students sought her advice as she was one of the few women on campus (AMITA Timeline, 2021). In 1968, RPI appointed Vicki Doff to Women’s Advisor and in 1971 Cindy Soja was appointed to Coordinator of Women’s Affairs (Women at Rensselaer, 2021). Purdue also created a position in 1968 which focused on increasing women’s enrollment and promoting retention (Bix, 2014). As a result, the number of women engineering students rose from “46 in 1968 to 280 in 1974 to more than a thousand in 1979, which represented the nation’s largest female engineering enrollment” (Bix, 2014). Organizations addressed female students’ needs within academics and as a whole. The Purdue Women in Engineering

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Program (WIEP) established in 1969 aimed to encourage women in STEM. The Women Students' Association established at Georgia Institute of Technology in 1957 worked to "promote the general well-being of female students, coordinate their activities, and maintain 'the finest standards of character and conduct'" (Bix, 2014). Founded in 1899, The Massachusetts Institute of Technology Women's Association (MITWA), which later became the Association of MIT Alumnae (AMITA), bolstered the welfare of MIT female students by helping to create housing for female students, recognizing academic achievement of female students, providing scholarships for women, and offering other forms of support (Mission and History, n.d.). The Society of Women Engineers (SWE) was a prominent organization that empowered women at campuses nationwide. SWE "provided avenues for women to mobilize and provide each other with professional, social, psychological, and financial assistance" at over 170 colleges, universities, and technical institutes by the end of the 1970s (Bix, 2014). These various officials and organizations helped fill gaps in the women's support system and addressed the needs of female students.

Institutions implemented a variety of initiatives to promote women in engineering. Cornell University was coeducational from the start; however, at the beginning few women entered the College of Engineering. Because of this the university hosted the "Women In Engineering—Beyond Recruitment" conference in 1975. Participants from other engineering universities and corporations, including Harit Majmudar, Professor and Department Head of Electrical Engineering at WPI, discussed selected papers and questions about women in engineering (Reese & Ott, 1975). In one workshop six groups discussed topics outlined by Mildred S. Dresselhaus in "A Constructive Approach to the Education of Women Engineers" (Reese & Ott, 1975). Some of the topics were faculty attitudes towards women, the effectiveness of affirmative action, and ways to develop encouraging environments for women (Reese & Ott, 1975). This conference demonstrated universities' efforts to understand and help the situation of women in engineering. Other efforts targeted younger women in high school to encourage them to enter STEM. For example, the University of

Iowa hosted a conference in 1974, named "Women in Engineering: Why Not You?" which let high school women hear from current and former coeds, industry representatives, and educators about careers and education" (Bix, 2014). In 1976, MIT implemented a notable plan with the establishment of the M.I.T. Affirmative Action Plan. The plan outlined means for eliminating "educational, social, and financial barriers," varying from "recruitment plans and materials ... to financial assistance to student support services (including counseling, tutoring and advocacy representation) ... [to an] increase in the number of women faculty members" (Bever, 1976). Purdue launched a program for women entering engineering in 1977 that was "designed to establish an educational model for women entering engineering which would enable them to participate more fully and more equitably in their education" (LeBold, 1978). The program offered a course geared towards women during which they could learn laboratory experience and hear from role-model lecturers (LeBold, 1978). "For most women, the laboratory experience provided not only their first actual contact with such tools, but considerably diminished initial fears about basic deficiencies" which helped narrow the technical knowledge divide between men and women (LeBold, 1978).

Engineering universities made incremental changes that improved the campus climate towards women. The universities addressed topics including facilities, mentorship, academics, enrollment, financial assistance, and campus climate using committees, organizations, and a variety of changes to university practices. These changes extended beyond access to the campus and considered female student success within and beyond academics. Changes included recognizing academic achievement and offering tools that aided in academic achievement such as tutoring, advising, and professional development. Universities addressed the social and general well-being of women with changes including investigating the extracurricular activities offered and providing counseling services. These methods led to a more inclusive and supportive environment for women in engineering.

WPI AND THE INCLUSION OF WOMEN

WPI: AN ENGINEERING INSTITUTION FOR MEN AND EVENTUALLY WOMEN

WPI adopted some of these methods mentioned above at its own campus as it navigated the journey of becoming a coeducational institution after its many years of being a male oriented community. Charles O. Thomas, WPI's first president, asserted that the university's mission was to "make it an educational force; to open the delights of learning to the mechanic and the manufacturer; as well as to the professional man" (Worcester Polytechnic Institute, n.d.). The university would limit the education to "male only" as long as such a practice was "more advantageous to the community" (Tymeson & Goddard, 1965). The university catered to the industries and cities' need for qualified men. In the late nineteenth century, manufacturing prevailed in the city of Worcester ("Worcester's Industrial Heritage," n.d.). WPI contributed to this workforce as many graduates remained in Worcester County as officers and managers of Worcester industries (Tymeson & Goddard, 1965). The institute established a special course on Shop Management because of the

significant number of alumni that started as engineers and became managers and business owners (Tymeson & Goddard, 1965). Engineering also demanded the ability to manage as progressing in engineering involved skills in the workshops and the ideal set forth was "middle-class men belonged on the production floors and building sites where they managed other men, while women dealt with more technical details in respectable environments" (Oldenziel, 2014). Science and engineering became increasingly limited to men as they sought to elevate science and engineering to professional levels, a concept tied to masculinity (Rossiter, 1982) So men excluded women in fear that the presence of women would lower the fields' 'prestige' (Rossiter, 1982).

These views of limiting engineering to men were ingrained since the beginning of WPI's founding, so although the Board of Trustees always had the power to declare coeducation they were not inclined to do so. WPI would remain male-only for the first century. The student body first changed in 1957 with Audrey Carlan as the first woman graduate student at WPI. Then in February 1968 the Board of Trustees approved the admission of women to the undergraduate program. WPI's decision to admit women came at a time when the university was in the process of revolutionizing some of its long-standing policies through the WPI Plan.



Figure 8: Shop Management Class in Salisbury Laboratories ([Shop Management Class], n.d)

EFFORTS TO INCREASE WOMEN'S ENROLLMENT

After the allowance of women on campus, the focus needs to change to increasing women's enrollment. The admissions office sought to increase women's interest in the university through a variety of methods including improved recruitment policies and greater outreach to high school women interested in STEM. Roy Seaberg, the Director of Admissions, in a 1974 memo to Dean Resutlinger, commented on WPI's difficulties with attracting female applicants in comparison to MIT and Clarkson and wrote of ideas such as having female students write letters and conduct tours for prospective women applicants (Seaberg, 1974). That same year the Committee on the Status of Women noted "a 'women shortage' in students, faculty, and in administration" and offered suggestions including "that recruitment policies and public relations pamphlets be reviewed" (Landry, 2015).

In 1974, the Committee on the Status of Women noted a 'woman shortage' in students, faculty, and in administration."

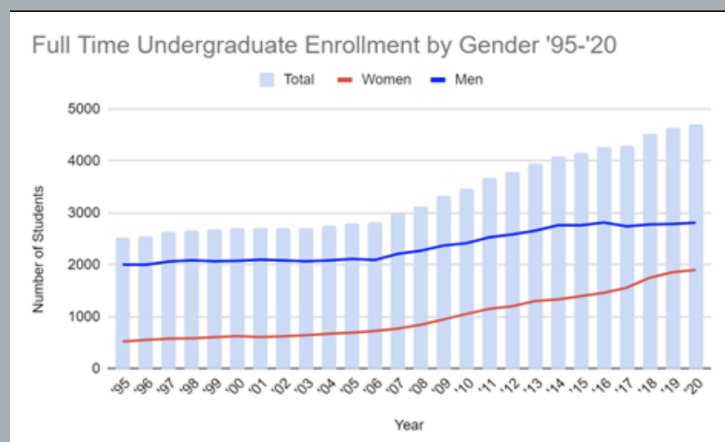


Figure 9: Enrollment data from the Office of Institutional Research (Enrollment, 2020)

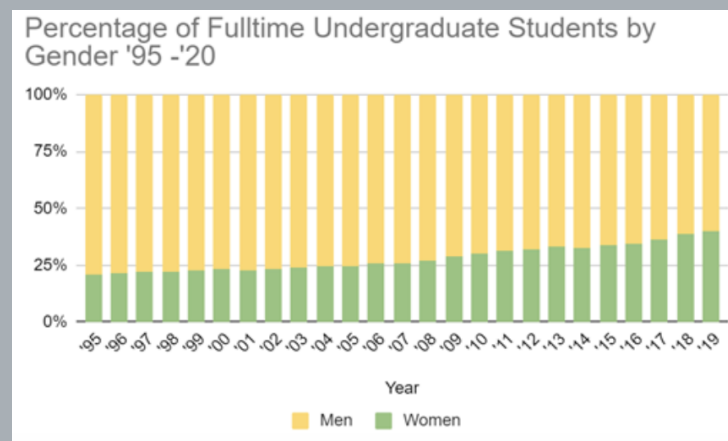


Figure 10: Enrollment percentages from the Office of Institutional Research (Enrollment, 2020)

To further bolster women's enrollment, the university increased investment into the pipeline of women in STEM. Programs, such as Camp Reach which started in 1996, invites middle school girls onto campus to learn about STEM. In 2008, the admissions policy changed to test optional which led to 81% more female applicants over the following decade (WPI Marks 10 Years of Test-Optional Status, n.d.). The number of women has increased over time. The total number of women undergraduates increased from 1221 in 1995 to 2570 in 2015 (see Figure 9). From 1995 to 2005 the percentage of women undergraduates at WPI increased from 20.7 percent to 24.7 percent. In the next decade from 2005 to 2015 the percentage rose from 24.7 to 33.6 percent (see Figure 10).

WOMEN'S INCREASED INCLUSION IN STUDENT LIFE

Since the admission of women undergraduates in 1968, the WPI campus has undergone significant development in regard to women's opportunities and involvement in student life. A step towards women's inclusion on campus involved existing student organizations permitting women to participate. For instance, the Alpha Epsilon Pi fraternity decided to pledge women in 1969 and pledged three women and twenty-nine men that year (Alpha Epsilon Pi Pledges Co-Eds, 1969). Tau Beta Pi, an engineering honor society, also started accepting women and Lesley Small '72 became the first woman president of the organization. In 1973, the Army Reserve Officers' Training Corps (ROTC) accepted women into the program. The first woman in the student body president position was Maryann Bagdis who was acting president in 1970. Then a strong backing of women on campus occurred in 1974 when Denis Gorski '75 became the first woman elected by the student body as SGA president.

Programs geared specifically towards women were another aspect to women's inclusion and filled areas where women still lacked opportunities and support. In some cases, the female students took initiative themselves to establish the necessary organizations. For example, Patricia Graham '75 with the help of Bernard Brown, then dean of students, inaugurated WPI's women athletics program in 1971 (Landry, 2015). In 1981, Teresa "Resa" Williamson and other female students founded the Women's Awareness Group (WAG) with the mission to raise campus consciousness regarding women and to bolster women's support of each other (Landry, 2015). The Society of Women Engineers (SWE), chartered in 1975, was another organization dedicated to supporting female students. Additionally, the first sorority Phi Sigma Sigma, established in 1977, created another space specifically for women.

The number of organizations specifically for women continue to grow. These groups play a vital part in promoting women's inclusion on campus. There are now six sorority chapters on campus. More professional societies for women exist such as Women in Robotic Engineering, Women in Electrical and Computer Engineering, Women in Cyber Security, and Women in Mechanical and Materials Engineering which was just established in 2020. The Women's Impact Network (WIN), an organization of WPI alumnae and women associated with WPI, offers grants for initiatives that positively impact women in STEM. Fourteen grant applications were awarded in 2020-21, including ones for a WIN Colloquium Series, a graduate research organization for women (GROW), and a woman in data science conference.

The admittance of women undergraduates in 1968 began a series of changes within WPI to make the university more inclusive and welcoming towards women. WPI has continued to expand upon these efforts by creating initiatives that support all historically underrepresented populations. The motivations and setbacks surrounding WPI's recent DEI initiatives will be discussed in the following section.

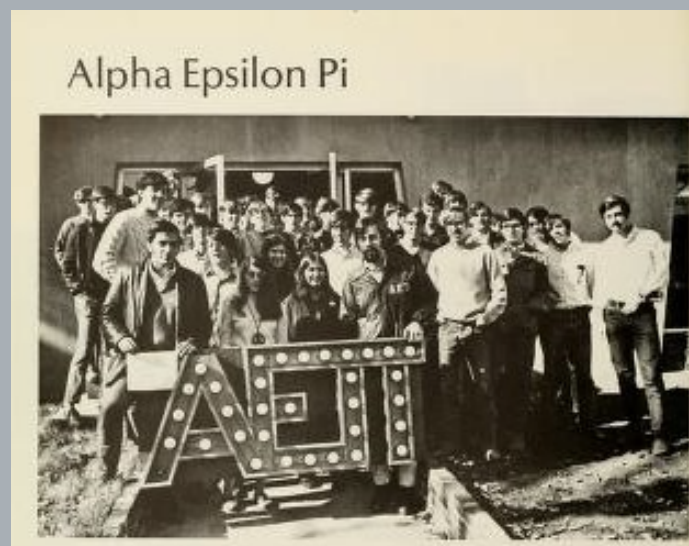


Figure 11: Photo of Alpha Epsilon Pi Fraternity in 1970 (Worcester Polytechnic Institute, 1970)

THE SUPPORT AND SETBACKS AROUND WPI'S DEI INITIATIVES

WPI has established multiple DEI initiatives for the members of its community. From student run organizations like the Society of Women Engineers, to campus wide initiatives like Project Inclusion, many offices and departments of WPI have worked to promote a welcoming campus environment for all. The Office of Diversity and Inclusion has led the school's most recent DEI initiatives such as Project Inclusion, the Bias Response Program and the Sustainable Inclusive Excellence action plan. However, departments such as the International House, the OASIS house, and the Office of Multicultural Affairs (OMA) have all contributed to this university wide effort of promoting diversity.

Project Inclusion began in 2017 and aimed to set standards and expectations on the campus that would foster an inclusive environment (Project Inclusion, n.d.). The Bias Response Program (BRP) was developed in 2020 and its goal was to provide an outlet to students who need help, but who are not sure of where to go or who to contact (Hanna, R., personal communication, March 31, 2020). Currently WPI is implementing its Sustainable Inclusive Excellence action plan (SIE), which is designed to build off the efforts made by Project Inclusion. Online resources such as guides on topics such as LGBTQIA+, accessibility, intersectionality are available from the library. Safe spaces like gender neutral bathrooms can be found all over campus. Student run organizations like the Alliance, Black Students Union and Society of Asian Scientists & Engineers give students the opportunity to meet others with whom they share an identity. WPI has made strides to promote DEI on campus, but still faces roadblocks that inhibit progress.

Rame Hanna, Director for Diversity and Inclusive Excellence, explained that the Office of Diversity and Inclusion aims to engage and educate the WPI community about issues regarding DEI so that everyone can commit to expanding diversity on campus. Support for DEI at WPI comes from all levels: faculty, staff, students, alumni. This shared

responsibility is exemplified through the participation of those members in the school's DEI initiatives. For example, in the fall of 2020, 12 listening sessions were held for students, faculty and alumni to voice their concerns and suggestions regarding diversity and inclusion at WPI. Staff and faculty members from various departments such as the Office of Diversity and Inclusion and Student Affairs directed these live sessions (Hanna, R., personal communication, March 31, 2020). All data collected was analyzed to identify recurring themes. Some themes included the need for greater equal access to resources, the need for increased representation on all levels and the feeling that WPI is politically unaware (Listening Session, 2020). These themes stemmed directly from the WPI community.

Colleen Callahan-Panday, Director of International Student Life, who began working at WPI in the fall of 2008 has commended the progress WPI has made but acknowledged that "We can always do better.... we can always do more." The challenges of fully infusing DEI into the WPI campus involve getting everyone to actively have conversations about DEI at the same time. There are over 5000 members in the WPI community. The campus continues to incorporate diversity into its mission and values, but it does not force any one individual to partake in the initiatives set forth. For example, in WPI's curriculum, students are not obligated to take courses regarding DEI in order to graduate. These courses, as well as other DEI events, exist but only reach those who actively want to attend. The challenge comes in expanding this outreach to all corners of the WPI community. WPI continues to implement new DEI initiatives, but any resistance to these come from the inability to make someone actively participate and think about these issues. Our IQP project aims to aid WPI in its DEI efforts and self-awareness by examining gender discrimination on a binary level and the experiences of the first women on campus from 1965 to 1980.

METHODOLOGY

The goal of our project was to investigate gender discrimination within WPI from 1965 to 1980 to illuminate a grim piece of WPI's past. We examined the attitudes and practices that shaped WPI's admissions policies as well as investigated the experiences of the first female students admitted to the school. We also examined the ways in which the university and female students sought to overcome gender discrimination. This historical perspective contributes to a better understanding of other current forms of discrimination on campus and in the world which will better equip WPI in its efforts to promote inclusivity on campus. To accomplish this goal, our project had five objectives:

1. Assess the rationale and attitudes for not admitting women students to WPI.
2. Determine the factors that led to the decision to admit women to WPI in 1968.
3. Document the experiences of the first cohorts of women students at WPI and analyze how the instances of discrimination reflect broader discriminatory mechanisms at other STEM universities.
4. Investigate ways women students at WPI advocated for themselves and helped develop a more inclusive environment.
5. Evaluate ways in which university policies and structures impacted women's enrollment and experience on campus.



Figure 12: Example of a collection from Gordon Library's Special Archives & Collections (2020)

ASSESSING ATTITUDES AROUND THE ADMITTANCE OF WOMEN AT WPI

It took WPI over 100 years after its founding to admit women into the school. Our first objective was to identify and understand the rationale behind why women were barred from WPI for such an extended amount of time. This understanding provided insight as to why discriminatory policies were accepted and sustained at the university. We also investigated the factors that led to this policy change in 1968. This provided further insight into how the inclusion of women in WPI occurred. It also showed to what extent this was discussed prior to this decision being made. We will address the following questions:

- What were the justifications for not admitting women to WPI?
- To what extent was a quota system implemented at WPI that limited women from attending?
- How did the student body react and respond to the discussion around potentially allowing women to attend WPI in the late 1960s?
- Who were the primary advocates for admitting women to WPI?
- Who made the decision to admit women into WPI?
- What were the arguments for admitting women into WPI?
- What was the resistance to such a change in the admission policy?

To answer these questions, we conducted archival research and key informant interviews. The main focus of the team's archival research was on the Board of Trustees committee meeting minutes. We also examined internal weekly memos and documents from the Committee on the Status of Women. These sources allowed us to identify the time period in which women became a topic of discussion, how women were talked about by men at WPI and who participated in these discussions. WPI newspaper articles also gave insight into the type of information available to the student body regarding the admittance of women and the way it was portrayed.

To analyze this data, we will use a combined deductive and inductive approach. We have developed a list of analytical categories, or themes, based on our literature review that address some of the attitudes

ASSESS THE EXPERIENCES OF THE FIRST WOMEN COHORTS AT WPI

towards women in engineering. Such analytical categories include lacking competence, stripping opportunities away from male students and being a distraction. During our archival research we will use these categories as guidance. As we collect data, we will search for sources that reinforce these predetermined themes. An inductive analysis will also be conducted on all data. This analysis will involve deriving “concepts [and] themes...through interpretations made from the raw data” (Thomas, 2006). An inductive approach will ensure the identification of any major themes from the data that we may have missed from our deductive approach. The steps behind this approach involve identifying different topics among the responses, condensing these topics into analytical categories, and then coding these responses based on the categories to develop overarching themes (Schmidt, n.d.).

We conducted semi-structured interviews with students, faculty, and staff who were on campus during this time period. To gain trust, participants were notified that their responses would be used only with their permission and to further aid WPI in creating a better understanding of its history. Since our target population was people who held specific positions at WPI within a certain time period we used a nonprobability, purposive sampling method. Nonprobability sampling is used when dealing with hidden or highly sensitive populations and purposive sampling is when “researchers use their special knowledge...about some group to select subjects who represent this population” (Lune & Berg, 2012). We identified faculty interview candidates by examining the WPI Undergraduate Catalog to identify which faculty members were employed at the school during 1965 to 1980. To further expand our sample size, we utilized a snowball sampling method which involved asking the initial participants to refer other people with whom we can conduct interviews (Lune & Berg, 2012). The interviews were semi-structured to allow for elaboration on any points that arose from our initial set of guiding questions (see Appendices D-F for interview questions). Each interview was transcribed, and then deductive and thematic analyses (as described above) were conducted.

After exploring how and why women were accepted to WPI, we examined the experiences of the first classes of women to learn of the challenges they faced. Their experiences were compared to those of women at other STEM universities to discern any commonalities that may have existed beyond the realm of WPI. Our research focused on the following topics:

- Patterns within discriminatory situations faced including those due to individual behaviors and institutional practices
- Themes derived from negative and positive experiences shared by the women
- Similarities and differences discovered from experiences at other STEM universities

Our approach involved archival research and key informant interviews. Amy Bix in her 2014 book, *Girls Coming to Tech*, which detailed three case studies about coeducation at engineering universities, used a similar methodology and resources.

We conducted semi-structured interviews with female students from some of the first graduating classes. The semi-structured format enabled us to probe responses and gave space for elaboration. We clarified that we wish to learn how discrimination is enacted and overcome by understanding encounters of gender discrimination. Our questions focused on the challenges the women faced but also on their most favorable recollections from their time at WPI (See appendix D-F for interview questions). This allowed us to learn from positive and negative experiences. When relevant we used photo elicitation to aid in our interviews. Photos were gathered during archival research from sources such as yearbooks. The images could remind participants of a time once forgotten and draw out older memories. By interviewing multiple students from varying years, we developed a more comprehensive and thorough understanding of women’s experiences at WPI. When conveying their stories, names were removed where applicable to protect the identities of those involved. With the help of student directories and the Office of Lifetime Engagement we determined who to contact.

ADVOCACY FOR FEMALE STUDENTS AND ITS EFFECT ON CAMPUS

Interviews were also conducted with women of MIT. Their responses were used to gauge whether the experiences of the women at WPI extended to women belonging to other STEM universities at that time.

During our archival research we examined documents such as student newspapers, WPI Alumni Journals, student organization records, and yearbooks. As we inspected these resources, we looked for themes regarding women's involvement and exclusion on campus. Our team also learned more about the on-campus atmosphere towards women by examining these documents. Additionally, we used photos as a part of our analysis by encoding them based on the concepts they depict (Saldana, 2008).

As a part of documenting the experiences of female students we analyzed the strategies they used to address and overcome misogyny. We learned about the support systems female students created to advocate for themselves as well as other characters on campus who stood in solidarity with them during their efforts. Our research addressed the following areas:

- Identify the support systems that came about because of female students on campus from 1968-1980.
- Discover the informal strategies female students at WPI adapted during 1968 to 1980 to combat gender discrimination.
- Pinpoint other characters who lobbied for female students at WPI from 1965-1980.
- Examine the lasting effects of the efforts made by female students at WPI from 1968-1980.

Answers to these areas of research stemmed from archival research and in-depth key informant interviews with female students who were present at WPI from 1968 to 1980. Interviews were also conducted with male students who were on campus during that time period and other characters who played an important role in the women's experiences (see Appendices D-F for interview questions). This approach of interviewing people based on referrals from other interviewees is known as snowballing sampling which is described above. The interviews were semi-structured and aimed to elicit authentic responses that gave way to personal reflections, which could not be found in formal documentation such as meeting minutes and brochures. Data from these interviews underwent a deductive and thematic analysis, which is described in detail under the first objective.

In WPI's Archives and Special Collections we examined documents such as yearbooks, student handbooks, and internal newsletters to identify any clubs, organizations and resources that evolved for women. Further research was conducted to identify the individuals who initiated such programs, the reasoning behind the creation of them, and if they are still present on campus today. Data found will also



Figure 13: Students during Commencement (Worcester Polytechnic Institute, 1976)

undergo deductive and thematic analyses as described above.

From this collection of data, we learned about the steps women and others took to advocate for women on campus, the university's reaction, the level of concern regarding their efforts, women's involvement in the university's solution, and the lasting effects of these solutions. Identifying the actions women took to improve the conditions on campus highlighted areas that were problematic.

IMPACT OF UNIVERSITY PRACTICES

Finally, we examined university actions and inactions that bolstered and hindered women's advancement at the university. This helped us identify formal mechanisms, such as campus accommodations, academic resources, and policies that supported women. We also explored the development and reasons behind the university's actions. The areas of impact involved women's admissions, academic achievement, and social success. Our research considered the following questions:

- How did the university support female students?
- In what ways was university support for women inadequate?
- How did institutional changes make the campus more accepting and enticing towards prospective and present female students?
- How did the university increase women's enrollments through the use of recruitment strategies, financial aid incentives, and other informal actions?

To identify and evaluate the university's efforts we conducted archival research and key informant interviews with both male and female students who were present (see Appendices D-F for interview questions). We analyzed student newspapers and university records such as ones from the Committee of the Status of Women. During this analysis, we looked for common themes in the university's approach to supporting women as well as evaluated the effectiveness of its practices. We also searched for practices that related to themes found in research about other engineering universities such as

implementing academic resources, opportunities outside of academics, and increasing enrollment.

As a part of the interviews with female students, we learned their perspectives of the university's practices and forms of assistance. We also learned about situations in which university practices impeded or aided them. This helped us understand the consequences of the institution's actions. Interviews with male alumni provided a different perspective on the changes within the university and actions of peers. Data from these interviews were compared and contrasted with the experiences shared by the women to identify any overlap or disconnect. This gave us valuable insight into how male students felt about and treated their female peers. We conducted interviews with faculty and administrators at the time to gain another perspective on how the institutional changes impacted female students (see Appendices D-F for interview questions). We interviewed members who were involved in the supportive efforts and policy making to better understand the changes. We encoded the interviews as described in previous sections and identified themes that emerged. Additionally, we looked for patterns that addressed topics found in research about coeducation at other engineering universities.



Figure 14: Student studying outdoors (Worcester Polytechnic Institute, 1972)

RESULTS AND ANALYSIS

In this chapter we present our analysis of the information we collected through archival research and key informant interviews with WPI alumni, faculty and staff. We first identify the material causes of exclusion such as lack of facilities. We proceed to identify the social causes of exclusion found at WPI, which we categorize as formal and informal. Formal social causes consist of unfair methods of student assessment, lack of sports, clubs and organizations, and lack of formal mentorship opportunities. Informal social causes consist of sexist comments, instances of harassment, a sense of not belonging, lack of respect and heightened pressures. After discussion of the causes of exclusion, this chapter presents the ways in which female students found support and overcame these exclusionary mechanisms. These findings will assist in creating a better understanding of the mechanisms that encouraged gender discrimination at WPI. With this understanding WPI may better allocate resources to support all underrepresented groups on campus and to make sure it is a welcoming environment for all.

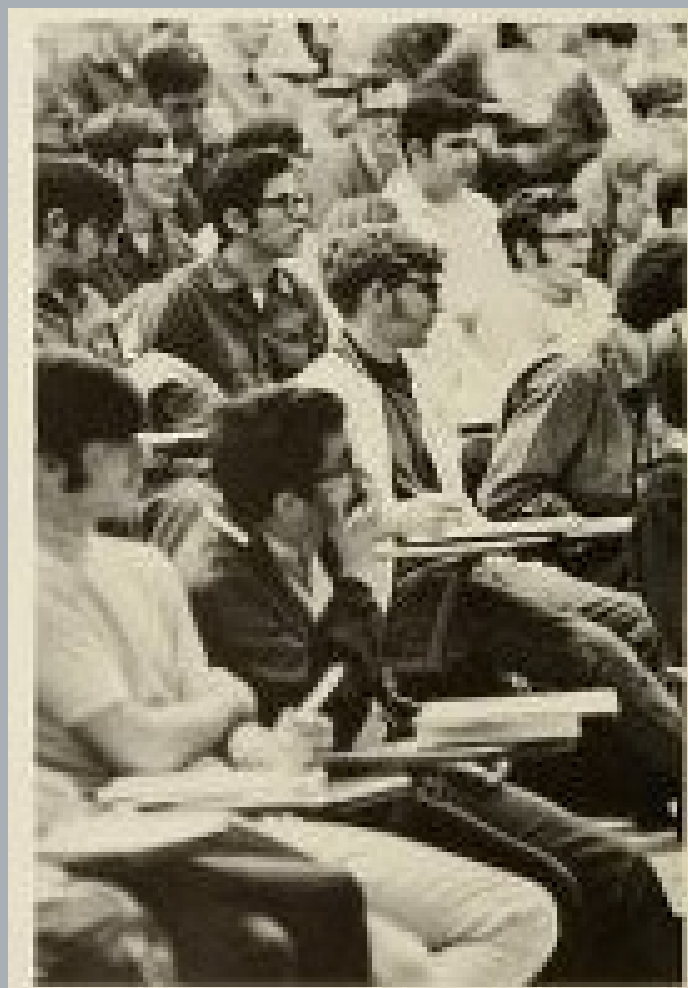


Figure 16: Classroom filled with male students (Worcester Polytechnic Institute, 1970)

THE ACCEPTANCE OF FEMALE STUDENTS

The Board of Trustees first admitted female students into the undergraduate program in February 1968. The year prior the board had “lukewarm attitudes” (Board of Trustees, 1968a) about the idea and found it “not desirable at [that] time” (Board of Trustees, 1967). In 1968, after the decision, there was some question as to “whether or not to limit female admissions by a definite quota, i.e., up to 5% of the entire undergraduate body” (Board of Trustees, 1968a). This potential quota never appeared to be implemented. In 1978, a decade after the decision, the incoming class of 550 included 91 women (Landry, 2015).



Figure 15: Woman with handprint (Worcester Polytechnic Institute, 1971)

UNSUITABLE LIVING AND LACK OF ACCOMMODATIONS PROVIDED FOR WOMEN

The lack of housing and infrastructural accommodations served as one of the key mechanisms of discrimination against female students. Inadequate retrofits of existing infrastructure, specifically the dorms and restrooms, created another challenge that impacted their experience. In addition, there was a distinct lack of social spaces for students to congregate, and stricter rules and regulations imposed upon female students that did not exist for their male counterparts.

When the first two undergraduate women were admitted to WPI they were only given the option to commute because the university did not have housing for female students. As commuters, these students had nowhere to store their belongings and had to carry everything with them throughout the day (J. Rossetti, personal communication, April 22, 2021). They would often spend most of their time in the George C. Gordon Library on campus, mainly because that was one of the few locations that also had a women's restroom (J. Rossetti, personal communication, April 22, 2021). In the October 22, 1966 Board of Trustees Meeting Minutes it was revealed that the university "ha[d] not catered properly to normal needs of [their] non-fraternity and commuting students" (Board of Trustees, 1966). One professor recalled that when asked about Campus Center-like locations where students could congregate and socialize, the President at the time refused since he was more concerned with the university's financial debt (anonymous informant, personal communication, April 4, 2021). On May 27, 1975, the Society of Women Engineers wrote to the Dean of Student Affairs requesting that a women's center be built on campus (Bouvier & Thompson, 1975); however, nothing developed from this request. That first year, the two pioneering women experienced an additional challenge due to the lack of housing and social spaces.

The lack of women's restrooms on campus was a common issue for female students. The majority of

women's restrooms on campus were reserved for the office secretaries and administrative assistants so they would often be locked. Female students would have to go through the inconvenience of finding the key before they could use the restroom (anonymous informant personal communication, April 13, 2021; L. Byrne, personal communication, April 15, 2021). Frequently they would have to plan their day around when and where they could use a bathroom (L. Byrne, personal communication, April 15, 2021; J. Rossetti, personal communication, April 22, 2021).

In the fall of 1969, the university decided to house female students in the west wing of the first floor of Sanford Riley Hall. Their restrooms were men's restrooms just with a new sign put over it. Since the residence hall was shared with male students, it was reported that male students would constantly try to use the female residents' restrooms (anonymous informant, personal communication, April 16, 2021). The female residents would often need to have somebody on watch when they used the shower to ensure that male students would not enter (anonymous informant, personal communication, April 16, 2021). An alumna recalls how "The men's room had a gang shower, and urinals, and they just left it like that. And that was our ladies' room" (L. Byrne, personal communication, April 15, 2021). Female residents would wear bathing suits to shower and use the urinals to wash out their stockings because they were still set up as male restrooms (L. Byrne, personal communication, April 15, 2021). Female students also planted flowers in the urinals. Male professors recalled these struggles that female students faced with restrooms and some believed that the university did not want to spend money on restroom renovations in the case that female students did not stay on campus (anonymous informant, personal communication, April 4, 2021). WPI actively recruited female students when they voted to be coeducational, but the university failed to take the proper steps to prepare for the needs of female students. It was discovered that the administration did not take action because they believed that "eventually" much will be done (Committee on the Status of Women on the WPI Campus [Committee on the Status of Women], 1974a).

FINDINGS

In the residence halls, there were certain restrictions applied to the female residents that did not apply to their male counterparts, such as the allowance of guests and curfews. Female residents had a midnight curfew throughout the week and a 2:00 AM curfew on weekends, while the males did not have one at all (Student Gov't Support Co-eds' Curfew Protest, 1969). Males were also allowed to have female guests in their dorms, but female students were not allowed to have any man in their hallway, even their own father (L. Byrne, personal communication, April 15, 2021). Housing as a whole became an issue for the institution as they only guaranteed housing for first-year students. Due to the lack of housing after the first year, male students often relied on fraternity housing, meanwhile females had to try to find an apartment off campus (L. Byrne, personal communication, April 15, 2021; anonymous informant, personal communication, April 16, 2021).



Figure 17: Photo of restroom in Salisbury Laboratories (Richmond, 1960)

“The men's room had a gang shower, and urinals, and they just left it like that. And that was our ladies' room”

Men had more alternatives in terms of housing, while females had limited options since they did not have the same opportunity as men to pursue Greek life at the time. When women were first admitted, they were also expected to uphold some of the male dress codes that were put in place. One alumna recalls when WPI would “require that every student wear a jacket and tie for Sunday dinner in the cafeteria” (L. Byrne, personal communication, April 15, 2021) and how the university was concerned about “[a] strong reaction to the dining hall code” (Board of Trustees, 1968b). Regardless, female students would follow these dress codes and go out of their way to borrow suits from their fathers, brothers, or other friends or family (L. Byrne, personal communication, April 15, 2021).

WPI failed to provide proper housing and accommodations to their female students after admitting them to campus. The school actively sought to recruit female students to only provide them with an experience that was not welcoming towards women. However, while women reported feeling welcomed and appreciated by the university's efforts, they also agreed that the dormitories and restrooms were inadequate. The lack of social spaces on campus caused women to often stick to their dorms where they had a restroom and could interact with other women. Having to plan their days around using the restrooms proved to be an inconvenience. These feelings of frustration were expressed throughout multiple interviews with alumnae. Thus the school's unpreparedness to provide proper facilities and accommodations served as a mechanism of discrimination against woman students on campus.

UNEQUAL METHODS OF ASSESSMENT

Women were subject to unfair methods of assessment in their classes. Due to physical limitations or favoritism, a few professors on campus would give women grades that were not representative of their performance in class. In one instance, an alumna was physically unable to lift the testing specimen during a class project. When asked what each member contributed to the project, her male teammates told the professor that she should get a lower grade because she never lifted the specimen. Even though she participated in other ways such as collecting data, writing the report and being present for all testing, she still received a lower grade (J. Franciose Scott, personal communication, April 19, 2021). In a physics class at WPI, the men were graded on a curve, but the women were not (anonymous informant, personal communication, April 19, 2021). There was another instance where a female student received an F for a final grade even though her scores were higher than some of the men's' in the class who passed (anonymous informant, personal communication, April 15, 2021). This was because she was a woman. Other times, women would receive higher grades than they deserved because they were favored by the professor. Not all women, but a few would also be "hit on" by the same professor who gave them that higher grade. In this way, women were not seen as equal to their male counterparts when being assessed in class. A few professors would discredit them by giving them lower grades than they deserve while others would favor them for non-academic reasons. The imbalance in methods of assessment for men and women in class contributed to the exclusion of women on campus.

Figure 18: Photo of Woman's Bowling Team (Worcester Polytechnic Institute, 1978)

LIMITED EXTRACURRICULARS

Campus activities first served as a manner of exclusion. Many clubs, in particular athletic teams, were geared towards men, which prevented women from pursuing their interests. For instance, when female students first tried to pursue athletics, the teams were only for men. In response, some female students became managers such as for the swim team. Although gym was required for men, women did not even have gym opportunities for the first two years. It was not until spring of 1970 when the first semester of women's physical education program started and offered swimming, tennis, and bowling (Storke, 1970). Women even had limited access to the pool outside of organized activities because "they've been given the excuse that the men like to skinny-dip" (Committee on the Status of Women, 1974b). There were discrepancies once women established teams. All women's teams, such as crew and basketball were "for some reason excluded from" receiving exemption from P.E. courses, a common practice for most men's varsity and team sports (Subcommittee on Academic Problems, 1974). Women's teams had limited resources and were relegated to marginal practice times. For example, the women's crew team practiced early in the morning so they could borrow the men's shells and field hockey practiced on the lawn behind Higgins. When they were first admitted, female students also had limited opportunities to participate in student activities in areas outside of athletics. For instance, initially the only campus singing organization was Glee club, a traditionally male only singing group. Fraternities were a big part of student social life and were also geared towards men.



MINIMAL FEMALE MENTORSHIP

Women lacked representation and mentorship within the faculty as the faculty was primarily male. Female faculty members could offer mentorship not only in the form of advice, but also as a role model. Having fewer women in the faculty meant fewer examples of women excelling in advanced STEM fields. A *Newspeak* article about women on campus described “that it is important for undergraduates to have women they can look up to in the faculty and administration” (Matte, 1973). The Committee on the Status of Women also noted this importance and recommended “increased female faculty members (especially in engineering disciplines), administrators, counsellors, and lecture-discussion participants” (Committee on the Status of Women, 1974a). However, an alumna noted that the administration did not appear to put “much effort to provide mentors” (anonymous informant, personal communication, April 27, 2021). The Committee on the Status of Women also reported that the lack of mechanisms, such as a women’s organization, that bring female students together meant “the majority of the coeds do not know who the faculty women are, nor are they aware that some of them would be receptive towards hearing personal problems students may have” (Subcommittee on Social Problems and Student Activities, 1974). The

lack of awareness heightened the problems of having limited mentorship available. The few female faculty members on campus became overburdened by carrying extra responsibilities. In addition to their normal teaching, research, and service responsibilities, they also often offered mentorship to female students and provided a female perspective on committees. This made it more difficult for them to fulfill their roles as a professor, a mentor and a role model.

The lack of female mentorship was also a challenge for MIT students during the study period. MIT alumnae recalled having primarily male professors. An alumna noted an absence of support within her department and that her advisor seemed uncertain on how to help a female student (anonymous informant, personal communication, April 28, 2021). The very few female faculty that were at MIT sometimes had trouble addressing the problems that arose for female students. For instance, an alumna described there being a woman’s advocate in the administration that students could go to. However, the advocate was not respected due to her gender, so requests made on behalf of the female students were not necessarily fulfilled (anonymous informant, personal communication, April 26, 2021). Barriers against women in higher positions such as administrations indirectly created additional barriers for the female students on campus.



Figure 19: Students sitting outdoors (Worcester Polytechnic Institute, 1975)

SEXIST VIEWS ABOUT WOMEN

During the 1965-1980 study period, there was a stigma around women in engineering as well as the expectation that women should pursue specific career paths in society. A minority of male faculty and students on campus believed women did not belong at an engineering school like WPI. Multiple WPI alumnae reported instances of professors who would explicitly state their unhappiness about having women on campus. Lorri Byrne '73 told a story of her roommate who received an unfair grade in a physics class. After her roommate brought the issue up, the professor responded, "Maybe this will show you that women do not belong at engineering school." Paula Stratouly Phillips '76 talked of how a professor introduced himself to the class and then stated, "I just want everybody to know that I don't believe females should be engineers at all." Lauren Stratouly Baker '82 revealed how a chemistry professor who wore a tie with "MCP" or "male chauvinist pig" written on it, told the class "I want everyone to know that I don't think women should be at WPI. I don't think this is the right place. This is not the right discipline." These faculty members at WPI made their dissatisfaction about women clear to all students. This feeling of not belonging at WPI also came from male peers. Allison Nunn '72, and Jayne Rossetti '72 reported how they felt resentment from other students. Jayne Rossetti '72 recounted a story of a man swearing under his breath at her as he passed by on Earle Bridge. Female students were told they did not belong. They recognized the discontentment felt by male faculty and peers, which contributed to a sense of exclusion on campus. These negative attitudes towards women can be attributed partly by the society's expectations of women during that time.

It was not common for women to pursue an education, especially in the field of engineering. There were strong masculine connotations associated with the field of engineering and because of those connotations women were not seen as fit for the field (Bix, 2004). Alumnae commented on these pressures and expectations put on women by society. Lorrie Byrne '73 talked of how women's roles were limited to teachers, nurses, or housewives who cooked and cleaned for their husbands. Ginny Fitzpatrick '75, shared a similar experience in her homelife. She mentioned how her parents were not supportive of her interest in math and science because women were supposed to "stay home and have babies, not go to school and get educated". Another alumna mentioned how there were much higher career expectations for her brothers than for her sister and her. Her mother wanted her to take a typing class "just in case" so if need be she would have the skillset to be a secretary. A history professor at WPI in the mid-1970s described how some colleagues felt women were not going to be able to handle this higher level of thinking. One alumna that felt women were treated "as being dumber". Alumnae at MIT had similar experiences. One alumna talked of how there was always a strong reaction when she told someone she was going to MIT. The reaction would be one of shock and disbelief (anonymous informant, personal communication, April 29, 2021). Another alumna mentioned how in her generation women did not have the expectation to work in order to provide for a family, like men did (anonymous informant, personal communication, April 28, 2021). Women were told that they were not meant for engineering and how they should fill their roles in society as housewives. Family members and WPI community members who supported sexist beliefs aided in the exclusion of women in engineering at WPI.

"I want everyone to know that I don't think women should be at WPI. I don't think this is the right place. This is not the right discipline."

FORMS OF HARASSMENT ON CAMPUS

Female students experienced harassment and unfair treatment on campus. There was verbal harassment in the form of subtle microaggressions and jokes but there was also physical harassment in the form of unsolicited touching. The school newspaper, Tech News, often referred to women on campus as “Co-Techs”. An interview with Lorri Byrne ‘73 revealed that this term was a play on words with the menstrual product brand, Kotex. She brought this issue up to the editor of the newspaper at the time, but he refused to change the term. Byrne also reported how a few professors would say, “if you want a good grade, I have a couch up in my office”. Another alumna reported receiving anonymous sexually explicit notes. She also reported how women would get their butts pinched but would not know who had done it because the men covered for each other. Staff also heard of problems regarding harassment. Dean Janet Richardson of Students Affairs, who started working at WPI in 1980, recalled how many male undergraduates on campus would refer to the Freshmen Record as the “Meat Book” which would be used to “check out” the incoming female students. The Freshmen Record consisted of photographs of all incoming first year students to assist faculty, among others, in getting to know their students, but was misused by the male undergraduates.

A few professors would say “if you want a good grade, I have a couch up in my office.”

Harassment was present at MIT as well. One alumna reported how a professor asked the women in the class to uncross their legs and put their feet on the floor. He proceeded to say “now that the gates of hell are closed, we’ll start the class” (anonymous informant, personal communication, April 26, 2021).

The professor asked the women in class to uncross their legs and put their feet on the ground. He then said, “now that the gates of hell are closed, we’ll start the class”

Another alumna mentioned how microaggressions were the most common form of harassment on campus (anonymous informant, personal communication April 27, 2021).

Many women accepted subtle forms of harassment because it came in the form of jokes that were supposed to be funny. One alumna told a story about a professor who was making videos for students to learn about the basic components of electrical engineering. She was invited to partake in the video. In the video the professor held up a resistor and said, “This is a resistor” and then pointed at her and said, “And this is a girl” (anonymous informant, personal communication, April 13, 2021). The message was that the male students did not know what either was. As the alumna recounted this story, she told it in a humorous light, remarking that it was quite funny. However, this joke singled out the only woman in the studio and normalized the fact that women were not common in the engineering field or at WPI. Harassment was present on the campus of WPI and was encouraged by the beliefs and attitudes that women were not good enough to be at the university. These sexist views and actions towards women contributed to the exclusion and discrimination of them during their time at WPI.

CHALLENGES WITH BELONGING

A sense of belonging enables students to feel included by the community and better engage with it. Many women felt uncomfortable because they “stuck out” among the predominantly male student body. This appearance of being different and not belonging stemmed from the small number of women a part of the WPI community. Having that representation and seeing similar identities reflected in the community is important in building and reaffirming a sense of belonging. At first, women did not have great representation on campus. An alumna explained “you could go all day without seeing another girl on campus” (L. Byrne, personal communication, April 15, 2021). In 1974, the Ad Hoc Committee on the Status of Women reported a problematic “woman shortage” evident within the student body, faculty, and administration (Committee on the Status of Women, 1974a). The year prior, there were forty women in the incoming class of 540 total students, which marked the largest enrollment of women up until that point. This brought the total number of female undergraduates to 106 (WPI Statistics, 1973).

Many women felt noticeably different around campus. Lesley Small, in an interview with The

Peddler, the university yearbook, stated that she “just felt very, very conspicuous and out of place” (Small, 1971). MIT alumnae also experienced feeling conspicuous and isolated as a woman on campus. One WPI alumna noted that she “stuck out like a sore thumb” when she wore a skirt the first day of classes in contrast to the many men around wearing pants (J. Franciose Scott, personal communication, April 19, 2021). The Committee on the Status of Women found that the low numbers made the women highly visible, and it was “apparent that female students [were] the center of amused, confused, and often apprehensive male attention” which “the majority [found] unsettling, to say the least” (Subcommittee on Academic Problems, 1974). Similarly, a 1970 Tech News article commented on how “speculation and stares often combine to make a new coed feel uncomfortable” (Blum, 1970). Lesley Small explained how she avoided parts of the campus and “didn’t dare brave the cafeteria or the snack bar” during her first year because she felt “everyone in the dorms might be looking out saying there goes ‘you know who’” (Small, 1971). One alumna illustrated another situation where women stuck out explaining how “the first day of class, the professors usually say, ‘Good morning gentlemen’ and then I’d hear ‘and lady,’ and then all of a sudden I’d have sixty eyes turn around looking at



Figure 20: Comic from 1970 Student Newspaper (Tech News, 1970)

a sudden I'd have sixty eyes turn around looking at me" (anonymous informant, personal communication, April 16, 2021). Another alumna recalled similar experiences and described how she sometimes felt uncomfortable because of how "they were going overboard in trying to accommodate women. Therefore, I was singled out because I was a woman" (G. Fitzpatrick, personal communication, April 16, 2021). A comic (Figure 5) printed in the *Tech News* in August 1970 also illustrates this extra attention placed on female students. After being shown this comic Bruce Nunn '73 and Allison Nunn '73 interpreted it as all the men in the first year class being very curious about the women who just arrived on campus because they were locked away in their half of the first floor in Sanford Riley.

Some men at WPI did not view women in engineering seriously nor that they fully belonged on campus. A 1973 *Newspeak* article noted that the women were "still treated as a 'novelty' by men on campus" (Matte, 1973). Multiple alumnae echoed this sentiment. The initial years of having women undergraduates was when this idea of "novelty" was particularly apparent. In another *Newspeak* article a female student commented on how some thought "that the girls [were] just here for show" (Chauvinism at Tech, 1973). Some women were accused of "just going to get a husband" due to the small proportion of women among the large number of men (G. Gross, personal communication, April 30, 2021). The rarity of women caused challenges. Nora Blum, the first female editor of *The Tech News*, wrote in a 1970 article how female students were frequently asked "Are you one of 'THEM - THEM' being the coeds" and how "an affirmative answer could be good or bad depending on both the one asking and even more on the one answering" (Blum, 1970). At first women "were not to be associated with" (L. Byrne, personal communication, April 15, 2021). Another explained "It was bad. It really was. Just because there were so few of us" (anonymous informant, personal communication, April 16, 2021). This illustrates how women on campus were viewed as different and how people had various, and potentially negative, reactions to women at WPI.

HEIGHTENED EXPECTATIONS OF FEMALE STUDENTS

Many alumnae had a strong determination to succeed at WPI. When talking about their experiences at the school, they stated, "I was determined to get my education" (G. Fitzpatrick, personal communication, April 16, 2021) and "I was determined I was going to get through ... I was just stubborn" (A. Nunn, personal communication, April 19, 2021). Another alumna explained "we persevered despite" the challenges (L. Byrne, personal communication, April 15, 2021). These feelings enabled women to overcome barriers they encountered. To some degree women ignored sexist attitudes or turned the encounters into motivation, however these prejudicial attitudes led to an exclusionary environment.

One alumna described it as "not overt standards but sort of subtle standards because you kind of standout ... if you screwed up for whatever, people would be more likely to notice"

The misogynistic stances that many professors, students, and other people had regarding women entering STEM fields and studying at WPI contributed to female students experiencing pressure to prove themselves. These unfair expectations of the female students appeared primarily in the academic setting. Amy Sue Bix (2004), on her case study of MIT noted the expectations placed on many women "to be perfect and better than average." Many WPI alumnae experienced similar expectations. They felt the need to demonstrate their abilities and to always do better than their male counterparts in order to be accepted by students and professors. This pressure does not foster an inclusive atmosphere.

Women described feeling that “[they] had to work twice as hard to be accepted” (J. Franciose Scott, personal communication, April 19, 2021) and that they excelled to “show you I can be here and that I deserve to be here” (L. Stratouly Baker, personal communication, April 23, 2021). They needed to prove their competence unlike their male peers. Some of this pressure to excel stemmed from their perceived risk of failing. One alumna described it as “not overt standards but sort of subtle standards because you kind of standout ... if you screwed up for whatever, people would be more likely to notice” (anonymous informant, personal communication, April 27, 2021). Though some women felt that the expectations of the professors and peers remained the same regardless of gender, others were well aware of the prejudicial views of women in STEM that some faculty and peers held. Alumnae described “I had to be better than the men around me, because I didn’t want to give into the people who were misogynistic” (anonymous informant, personal communication, April 16, 2021) and “you had to work that much harder, you had to be that much better. But we weren’t going to let them beat us” (L. Byrne, personal communication, April 15, 2021). Female students employed the tactic of overqualification, in an attempt to counteract criticism (Oldenziel, 2014).

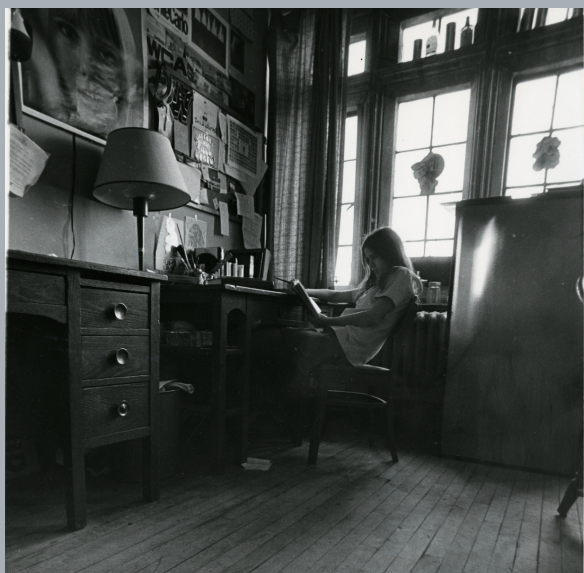


Figure 21: Student studying in her dorm in Sanford Riley Hall (n.a., 1970)

VARIOUS EXPERIENCES AS A FEMALE STUDENT AT WPI

The examples and experiences described above are not universal to all alumnae who were at WP between 1965 and 1980. Many alumnae reported never experiencing sexist comments or any form of harassment. Many also mentioned how the majority of the male students as well as professors were very welcoming. They described their time at WPI as wonderful and an experience that they would never trade. The lack of female restrooms was the most prominent and only issue brought up by the majority of our interviewees.

There was a lot of variation within the responses we received by interviewees. Before conducting interviews, we hypothesized that women who were at WPI in the later portion of the time period would have reported more positive experiences. Contrary to that, we expected women who attended WPI closer to when the decision was first made to have more negative experiences. This hypothesis was based on the assumption that as time passed and more women came to WPI, the school would have a better understanding of how to properly accommodate women.

Our findings did not support this hypothesis. There were women from earlier graduating classes who reported great experiences while women from later graduating classes still mentioned instances of sexist comments and actions. The variation of these findings was attributed to when the individual attended WPI, the individual’s major and the individual’s involvement on campus. Experiences were also dependent on how much the individual actively thought about the problems female students faced on campus. If the topic was not at the forefront of someone’s mind, they might not have been aware that problems were even occurring. We recognized that no two individuals were going to have the same experiences. The causes of discrimination mentioned above were the overarching mechanisms identified at WPI that influenced all these different experiences.

SUPPORT FOR WOMEN FROM THE ADMINISTRATION

Support for female students came from a variety of areas within the administration. For many alumnae these sources of support played a key role in their success at the university and counteracted some of the problems they experienced. These support systems helped address the exclusion of women.

Some individuals within the faculty and administration acted as important advocates for female students. At MIT, the advocates included Dean Gray and Professor Dresselhaus. At WPI, Bernie Brown, Assistant Dean of Students in 1968, John van Alstyne, Dean of Academic Advising in 1971, and Peter Scanlon, WPI's Catholic chaplain in 1969, played significant roles in listening to female students and helping them.

In our interviews, alumnae describe these men as wonderful and supportive. They cared about the integration of women on campus and tried to make it a comfortable and accepting place for them. After realizing that women were upset and treated poorly, Dean Brown began rectifying issues and forced others

to acknowledge their behavior. For instance, an alumna recalls him appearing around campus and asking the men why they got up and left the table when girls sat down (L. Byrne, personal communication, April 15, 2021). He also bought mirrors for the women's rooms, as requested, to help improve their spaces. Alumnae fondly recalled Father Scanlon hosting spaghetti Friday nights (anonymous informant, personal communication, April 19, 2021) and opening the faith center up to women so they could cook homemade meals (Dodd, 2009). This offered a space for women to spend time together. This was particularly important because limited community spaces existed on campus at that time for students. For instance, the Rubin Campus Center did not exist until 2001. Father Scanlon also served as an advisor when some female students worked to establish the Gamma Iota chapter of the Phi Sigma Sigma sorority (In Memoriam, 2012). Dean van Alstyne inspired students to stay and succeed and for some women, helped them foster confidence in their abilities (Kitchens, 1966). An alumna explained that "his door was always open to us and he was always checking in on us" (B. Poulin, personal communication,



Figure 22: Dean John van Alstyne (Worcester Polytechnic Institute, 1977)

FINDINGS

April 29, 2021). He also assisted women in finding other students to house with off campus. (B. Poulin, personal communication, April 29, 2021). Alumnae noted various professors that supported women. In particular, Robert “Bob” Wagner, a chemical engineering professor, also known as “Daddy Wags,” was “wonderful” and supportive of everyone and was “a very special person to that little chemical engineering niche, and especially the women of chemical engineering” (L. Stratouly Baker, personal communication, April 23, 2021). Students could go to his office if they were upset and “he would be there for every one of [them]” (L. Stratouly Baker, personal communication, April 23, 2021).

The few women, such as female resident advisors and deans, available on campus, to advise and help female students offered important aid. The university hired Elaine Kowaleski, a mathematics graduate student, as a resident advisor (RA) for the women and became known as “Ma Riley”. An alumna described Elaine as “wonderful. She supported us and tried to help us get through” (L. Byrne, personal communication, April 15, 2021). Dean Brown recognized Elaine’s important perspective as a woman and her vital role in supporting the female students since neither a counseling center existed nor were other professional women present on campus (Herwitz, 1987). As the number of female students grew, having female RAs continued to be crucial. The subcommittee on dormitories and other buildings reported “the increase to three females RA’s next year is essential” (Subcommittee on Dormitories and Other Buildings, 1974). In 1980, the university hired Janet Richardson as Assistant Dean of Students. Her primary responsibility involved overseeing the residence halls including hiring and supervising the RA’s. She continued to improve the dormitories and RAs for all students. Dean Richardson made an effort to be there for students in need of help and she recalled that “my door was always open and whether I was the Assistant Dean, the Dean, the Vice President, it didn’t matter” (J. Richardson, personal communication, April 21, 2021). Professors would often direct students in need of help, particularly the women, to her because she was one of the few female staff members on campus (anonymous informant, personal communication, April 4, 2021; J. Richardson, personal communication, April 21, 2021).

Her hiring demonstrated growth in the number of women in administration, as in 1974 the Committee on the Status of Women “strongly recommend[ed] the appointment of a full-time female administrator, probably in the Office of Student Affairs” (Committee on the Status of Women, 1974a).

The administration helped in some ways to encourage support for female students. For example, the Big Sisters program formalized the way older female students could connect and encourage younger female students. The administration also started pairing women together in classes, so they didn’t feel as isolated and furthered the opportunity for women to support each other (anonymous informant, personal communication, April 13, 2021). The WPI Faculty Wives club reached out to female students. For example, they hosted a potluck supper for first-year and sophomore female students in November 1974 (WPI News Bureau, 1974a). The university also contributed to the discussion regarding problems women faced. In 1974, a talk about sex-role stereotyping led by Dr. Susan Vogel, Worcester State Hospital and Dr. Barbara Kohin, City Council member (WPI News Bureau, 1974b) was hosted on campus. The administration at WPI, especially the key figures mentioned before, provided key sources of support for the female students on campus. This support proved vital in helping women overcome the challenges they faced.



Figure 23: Father Peter Scanlon ([Untitled image of Father Scanlon], n.d)

PEER SUPPORT FOR WOMEN

Over time, the organizations available to women provided another source of support. Particularly important were the opportunities meant specifically for women. These networks played an important part for many alumnae's sense of belonging at the university.

Female students supported each other through friendships but also through organizations. Many of the female students built important friendships with other women (A. Nunn, personal communication, April 19, 2021, and others). The sense of camaraderie combated the sense of loneliness they felt. They supported one another by studying together, listening to each other, and helping each other solve problems. One alumna valued "knowing you're not alone" and that they celebrated each other's victories and defeats together (Dodd, 2009). Women's professional societies promoted female students to succeed in their fields. For example, the WPI Business Women's Club frequently hosted events such as speakers and luncheon meetings (WPI News Bureau, 1973). The WPI Chapter of the Society of Women Engineers, which was chartered by female students in 1975, offered a space for women to receive career advice and support. Women-specific organizations offered women a safe space and a way to build a professional network among themselves.

Women's athletics teams significantly enabled women to become more involved on campus and to develop bonds with other women. Female students initiated the establishment of many of the women's athletic teams such as basketball, softball, and crew. The women's athletics program received some support from the administration, such as Dean Brown, but the passing of Title IX in 1972 really pressured the university to develop the program. The law mandated gender equity for all educational programs that received federal funding. Susan Chapman, hired in 1975, advocated for women's athletics and launched women's varsity teams. The university also eventually expanded the women's locker rooms. Women's athletic teams grew and became a supportive network for many. For instance, Nancy Popinchalk (Wood) started the women's crew team in 1972 (B. Poulin,

personal communication, April 29, 2021). The team provided many alumnae with an important social network of support (C. Demetry, personal communication, April 21, 2021).

Sororities were another type of organization meant specifically for women. Female students established the first sorority in 1977 to create a sense of sisterhood. Before sororities existed on campus, a few fraternities extended support and friendship to the women. In the fall of 1969, two fraternities, Alpha Epsilon Pi and Sigma Pi, accepted female students. Three women pledged Alpha Epsilon Pi (Alpha Epsilon Pi Pledges Co-Eds, 1969) and one pledged Sigma Pi. Other women, not officially pledged, still found a welcoming environment among some of the fraternities (anonymous informant, personal communication, April 16, 2021, and others). The friendships created in the fraternities established a sense of belonging. One alumna describes her fraternity as "a place where I could escape from the rest of the school and go down to the house and be with friends. And it meant so much to me to have that support." Fraternities were also a source of academic support as members helped each other with classes and provided access to more resources. The support offered by peers within organizations can be important for many students. Jayne Rossetti '72 explained in her interview how she did not have access to this type of academic or social support network and how it could have been very valuable during her time at WPI.

Female students at MIT also relied on similar sources of support. Many female students connected with each other because they all lived in the women's dormitory. As one alumna described "when life got tough, you always went to McCormick and there was always somebody there that you can talk to that would understand and that was truly wonderful" (anonymous informant, personal communication, April 26, 2021). MIT alumnae found support in the friendships they built. They could also help each other with academic questions. Similar to WPI, the women's athletics program was important to many MIT alumnae. They participated in a variety of sports including softball, crew, swimming, fencing, and gymnastics. These teams allowed women to explore their interests and build connections with other students.



Figure 23: Photo of Phi Sigma Sigma (Worcester Polytechnic Institute, 1980)



Figure 24: Photo of Women's Crew Team (Worcester Polytechnic Institute, 1976)



Figure 25: Photo of Delta Phi Epsilon (Worcester Polytechnic Institute, 1980)

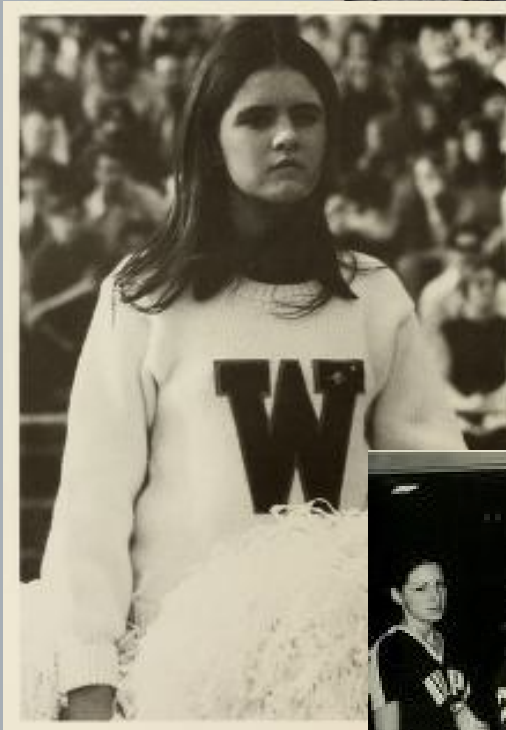


Figure 26: Photo of WPI Cheerleader (Worcester Polytechnic Institute, 1972)



Figure 27: Photo of Women's Volleyball Team (Worcester Polytechnic Institute, 1977)



Figure 28: Photo of Alpha Gamma Delta (Worcester Polytechnic Institute, 1980)

COMPARING THE FEMALE EXPERIENCE AT MIT TO THE FEMALE EXPERIENCE AT WPI

Interviews were conducted with MIT alumni revealed that WPI was not unique with the problems it had regarding women on campus. At MIT there was similarly a lack of mentorship, sexist comments and instances of harassment. WPI and MIT alumnae overcame these mechanisms of discrimination through organizations, clubs and sports as well as with the help of each other. While MIT may have had women on campus for over a century prior to WPI, that did not make the university more accommodating for women in comparison. This indicates that the challenges present at WPI from 1968-1980 were not simply due to the short period of time women had been present on campus. On the other hand, this longer history of admitting women to MIT also meant there was a more established alumnae group available to provide support for existing students, as there has been an alumnae group for women at MIT since 1899.

Alumnae can offer valuable support. For example, Katharine Dexter McCormick class of 1904 funded the women’s dormitory, Stanley McCormick Hall.

This group of women can also present more role models of high achieving females in STEM.

Another difference between the schools was MIT’s focus on individual work as opposed to WPI’s project-based curriculum. From interviews with MIT alumnae, it was clear that MIT was not as project centered as WPI. Many female alumni recalled very few group assignments except for when they were in a lab. While alumnae from WPI did not recall many instances of exclusion while working in project groups, the project-based curriculum opens up another dimension for potential discrimination to take place. It also integrates gender dynamics more deeply into academic performance. A female student’s grade now becomes partly dependent on her ability to work with her male partners. Further research can be conducted not only on female experiences at additional engineering schools, but also on the relationship between project work and exclusion.

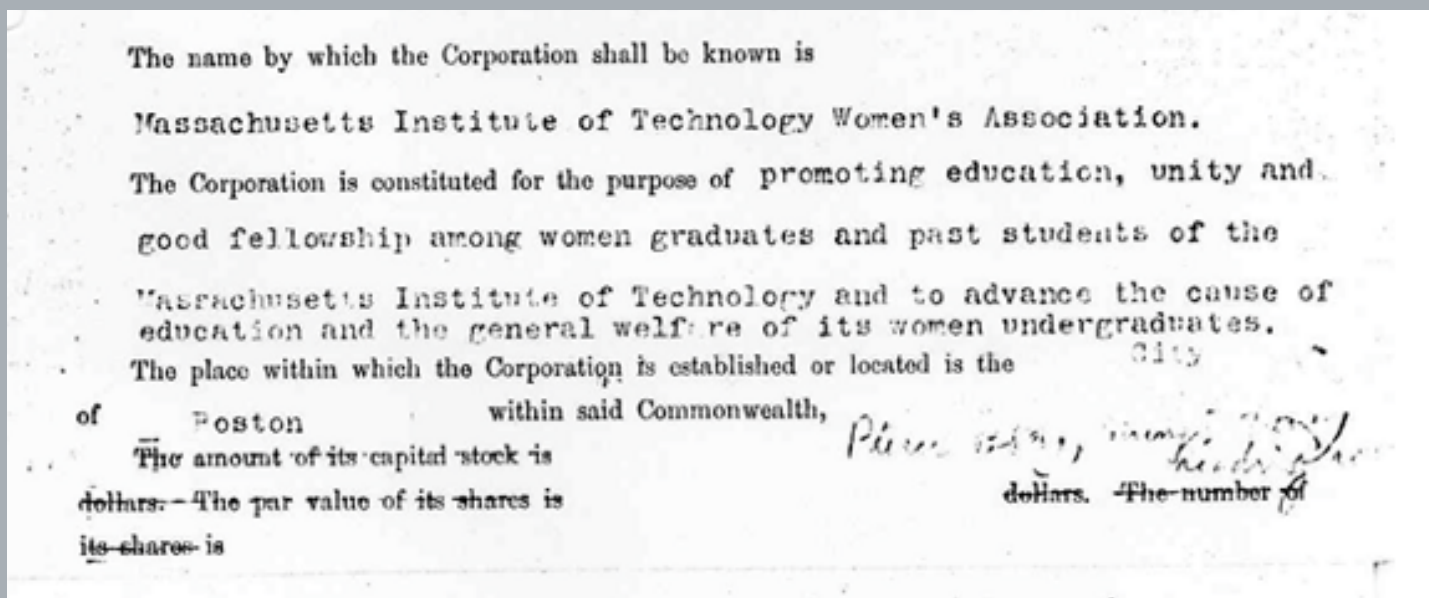


Figure 29: MITWA Charter ([Section of MITWA Charter], 1907)

CONCLUSION

The documentation of female students' experiences at WPI from 1965 to 1980 led to the uncovering of the discriminatory practices that existed at the school and the mechanisms through which they were supported. There were material mechanisms as well as formal and informal social mechanisms. The identified mechanisms are included below:

- Material Mechanisms
 - Unsuitable Living
 - Lack of Accommodations Provided for Women
- Formal Social Mechanisms
 - Unequal Methods of Assessment
 - Limited Extracurriculars
 - Minimal Female Mentorship
- Informal Social Mechanisms
 - Sexist Views about Women
 - Forms of Harassment on Campus
 - Challenges with Belonging
 - Heightened Expectation of Female Students

From these experiences, sources of support and advocacy for the female students at WPI were also identified and discussed. Sources included members in the administration, organizations, clubs and sports, and fellow female students. A comparative analysis was conducted with responses from MIT alumnae to determine the similarities and differences in discriminatory mechanisms and student experiences between the schools. The analysis showed that MIT alumnae faced many of the same problems that WPI alumnae faced, even though the school admitted women almost a century prior.

The lack of adequate infrastructure at WPI proved to be the most prominent mechanism of exclusion at WPI. This involved not having proper restrooms, housing and social spaces for women on campus, which made it more difficult for them to become integrated into campus life. Formal social mechanisms, such as unequal methods of assessment, limited extracurriculars and lack of mentorship, also added to this difficulty. Female student's academics would be put at risk at the discretion of the professor of the class. They were not able to pursue their interests and network with other people on campus because extracurriculars were not accepting of

women. Also, they had no one to turn to or look up to during their time at WPI because most of the administration and faculty were male. Informal social mechanisms also played a large role in the exclusion of women at WPI. Female students were forced to challenge and deal with the sexist views of their male counterparts. They were subject to various forms of harassment, such as microaggressions and assault. They had to face the feeling of not belonging everyday while also trying to prove their abilities. The mechanisms listed above are examples of how WPI actively engaged with the exclusion of female students on its campus.

Female students found ways to combat these mechanisms of discrimination. They found support in male administrators. All of which contributed their time in improving the female students' time at WPI. Women also found support from the few female faculty and staff that came to WPI. As more organizations, clubs, and sports (some of which were founded by female students) became available, women were able to expand their network of friendships and support. Back in the classroom and dormitory setting women often relied on each other to get through challenges. They could offer an open ear and an understanding of the problems each other faced. MIT alumnae recounted some of the same experiences at their campus. They found support from organizations and each other to overcome the sexist comments, instances of harassment and lack of mentorship.

This project had many limitations. WPI was founded in 1865, but only the years of 1965 to 1980 were encapsulated within this research. Other parts of the school's history were not explored. In this project gender was viewed on a binary level. Discriminatory practices against other genders on campus were not investigated. During this period, the university was predominantly Caucasian which was also true of our sample size. Therefore, this project did not capture the experiences and challenges female students of color faced. The exclusion of other underrepresented groups such as LGBTQ+ and disabled persons were not explored.

CONCLUSION

This project focused on discriminatory practices female undergraduate students faced but did not examine those practices among female faculty and staff at WPI. This project also did not focus on women's experiences before or after their college education. Our sample size had a slight bias towards positive experiences at the school. Many alumni, faculty, and administrators interviewed are still active in the WPI community indicating overall positive ties to the university. Alumni with potentially more negative experiences such as those who did not graduate were challenging to reach and possibly refused to participate. Our sample size was also

limited because we focused on only two higher education institutions. Our research had limitations due to the resources available. For instance, not all records were saved in archives and there were also gaps in interviewees' memories. The limitations in this project give way to future areas of research. As a historical study this project has identified the different mechanisms that should be evaluated when designing comprehensive support systems for female-identifying students at WPI. To further extend the discussion of discrimination, equity and inclusion on campus, this project also encourages the participation of all members at WPI in the listening sessions led by the Office of Diversity and Inclusion.



Figure 30: Project Team: Grace Gately (Top Left), Bryan Lima (Top Right), and Maylee Gagnon (Bottom)

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