# Tools in Hand: How Women and Non-Binary Trades Instructors Prepare Students for jobs in the Sexist Culture of the Construction Industry

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**Dedication**

*I dedicate this work to Amber Czech, a 2024 technical college welding program graduate who, on November 11, 2025, at the age of 20, was murdered by a male co-worker on a welding jobsite. Her life was taken for simply going to work and doing her job. When the research process became difficult for me, her tragic death reminded me of its importance.*

**Abstract**

This dissertation in praxis examined how women and non-binary people teaching in trades are addressing sexism in the construction industry. Inspired by brown's (2017) theory of fractals, this study looked at how changes made on small levels within trades classrooms can lead to changes within the larger system of the construction industry. This dissertation provided a background on women in construction, sexism within the labor industry, trades education, and feminist theories on community building in the literature review. One-on-one key informant interviews and one focus group with 10 women and non-binary trades educators engaged the research question: How are women and non-binary people teaching in pre-apprentice programs addressing sexism in the construction industry. Responses were inductively coded into two themes, with sub themes clarifying nuances in findings. Informed by participant responses and their analysis, this study provides recommendations for educators working within trades preparation programs on how to prepare women and non-binary students for careers in the construction industry. These include the implementation of skills-based teaching practices and efforts to challenge structural sexism, such as community building, partnerships across the industry, and identifying male allies.

*Keywords: women in trades; trades education; feminist community building; Emergent Strategy; sexism in construction*

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# Tools in Hand: How Women and Non-Binary Trades Instructors Prepare Students for jobs in the Sexist Culture of the Construction Industry

## Introduction

In March of 2020, I attended a Women in Trades conference held in honor of International Women's Day. There were many in attendance, filling the dozens of banquet-style tables, but the event gave a feeling of intimacy, perhaps because of the collective reaction to the oncoming pandemic or because the attendees were mostly women. There were other trades educators like me, but the majority of women present worked on construction jobsites.

Between inspiring keynote and presenting speakers sharing their journey as women in trades, two women from a local non-profit spoke. They had little notebooks in their hands. They explained that when facing harassment in the workplace, it is vital to take notes and write down details of each incident and that these tiny notebooks could be easily placed in tool bags and passed off as being meant for keeping measurements in. When I went in through the tabling hall on the way to the restroom, I saw the two women taking out several large boxes with hundreds of the tiny notebooks. When I returned from the bathroom, we were apparently on break and a line had quickly formed in front of the tiny notebook table as women lined up, the line began winding around the event center. When I returned to the table at lunch, the notebooks were nearly gone.

When I sat down at the conference tables again, I started to have a sinking feeling in my stomach as I thought to myself, "Surely, they were just taking the notebooks to keep measurements in, right?" After lunch, a question-and-answer discussion was facilitated around workplace harassment by a panel of union representatives and other mentors in the industry. When space was opened for attendees to share experiences in the workplace, a steady flow of hands began raising. The number of hands shooting up, as the discussion progressed, shocked me. Women in construction, welding, pipe fitting, and other trades

began to speak, sharing stories of threats of violence, daily stalking and other equally heinous forms of workplace harassment, many that remained unchecked.

I looked at the two women I had come with, both students of the program I teach in. My heart sank to my stomach and I asked myself: “What am I doing? What kind of work life is this program I teach in preparing these women to have?” I took them to the conference to make connections and learn more about what life in commercial carpentry would look like. Instead, I was questioning whether they should even be in the field because, as a teacher, I want to protect students.

My discussions with other women and non-binary people teaching in trades have been limited to the occasional run-ins at events like this conference. I came into this research wanting to know if others like me faced the same concerns around the future of the women and non-binary people we teach and what, if anything, they are doing to address those concerns. I began this dissertation hoping to utilize feminist community building practices to uncover experiences of women and non-binary pre-apprentice instructors acknowledging and addressing the prevailing sexism in the industry we teach within. For these reasons, my guiding research question was: How are women and non-binary people teaching in pre-apprentice programs addressing sexism in the construction industry?

**Background**

In 2025, The US Bureau of Labor Statistics found that women made up 11.3% of the US construction industry with only 4.3% of that accounting for women working on construction jobsites, while 7% of women in construction worked in administrative and management roles within the construction industry (U.S. Bureau of Labor Statistics, 2026). The 11.3%, therefore, can be misleading, especially in the context of this study, as trades pre-apprentice programs are intended to prepare students for skilled trades positions, rather than administrative jobs. One instructor I interviewed referred to this statistical categorization as “tools in hand”, which inspired the use of the term in this dissertation’s title, as this inquiry speaks specifically to women and non-binary workers in their pursuit of careers on job sites, with tools in hand.

In 1978, under the Carter Administration, the Department of Labor created a set of goals and timelines around hiring women onto federally funded construction projects. This began with the goal of qualifying projects having work crews with women making up 6.9% of the workforce. The final goal in the plan was for the construction industry to no longer be considered a non-traditional path for women, as women would hold 25% of construction jobs by the year 2000 (Eisenberg, 1998/2018).

In 2025, a quarter of a century after the 25% goal and nearly 50 years after Carter's initial goal, the construction industry is nowhere near having men make up only 75% of the workforce. On the contrary, data shows that the construction trades remain consistently male dominated over the course of time. It should be noted that the Bureau of Labor Statistics surveys offer only "male" and "female" gender markers and, therefore, do not track non-binary workers in any industry, which limits the data available around the role of non-binary workers in the construction industry (New York State Department of Labor, 2023).

In addition to the low representation of women in construction jobs, many women and non-binary people who do get jobs within the industry are subjected to unchecked acts and systems of discrimination and discriminatory harassment and violence, as my opening experience provides a glimpse of. In 2023, the Equal Opportunity Employment Commission (EEOC) documented over 50 pages of evidence of racist and sexist employment discrimination, declaring the construction industry as having years of the "most egregious incidents of harassment and discrimination" they have ever investigated (Burrows, 2023, p. 2). Specific horrific incidences of such behaviors are detailed in recent court cases filed by the EEOC (2022) against two different contractors for racism, harassment, and retaliation. Documented incidents of harassment include the frequent placement of nooses in the tool and lunch boxes of Black Workers, and repeated reports of male workers shaking and tipping port-potties that female workers were using (Burrows, 2023).

It may be because of the workplace hostility the EEOC describes that the construction industry remains predominantly male over the span of decades. A witness in one of the 2022 EEOC court filings testified:

> In an industry like construction, with multiple employers on a jobsite, it can be complicated to get relief from just complaining to the leadership of your own company, apprenticeship program or union. And leaving a job to avoid a harasser doesn't provide any guarantee that the same employee won't show up on the next job . . . . Regularly changing workplaces, employers and co-workers adds challenges to addressing and redressing sexual harassment (Burrows, 2023, p. 46).

A 2021 survey of women in trades labor positions found that nearly half of survey respondents (44.4%) have seriously considered leaving their careers, with 47.7% of those respondents citing lack of respect/harassment as the reason (Hegewisch, 2021). Hedgewisch (2021) also notes that, "The share of respondents who have left or seriously considered leaving is particularly high for LGBTQ respondents (54.3 percent), Native American respondents (52.8 percent), and respondents who do not have children (50.3 percent)", adding that women who held non-union positions were more likely to think about leaving (Hegewisch, 2021, p. 17).

The construction industry has built and maintained a culture of sexism. This is demonstrated both by the near absence of women working in the industry and the treatment of the few women and non-binary people working at jobsites. Additionally, this persistent culture is illustrated by the fact that, despite multiple efforts on the part of both federal and local governments to bring more women into the industry, the numbers remain nearly the same.

As an instructor in a construction pre-apprenticeship program, it is clear that I am preparing women and non-binary people for careers in an industry that clearly does not want women or non-binary people in it. As a teacher, this creates a difficult experience. Students come to me and my colleagues, hoping to gain skills that will lead to gainful employment. I teach, knowing that many of the women and non-binary learners who go on to work in construction will, according to statistics, most likely be the only

or one of few women or non-binary people on their jobsites. Women and non-binary people of color will also very likely be minorities on their jobsites both by race and gender. I fear that women and non-binary people in the courses I teach may go on to face experiences of sexism and discrimination like those detailed in the 2023 EEOC Report (Burrows, 2023). I am passionate about what I teach and love seeing learners take what they gain from our program into the real world, but I do have concerns about how they will be and are being treated in the construction industry.

## Researcher Identity and Voice

### Positionality

Sultana (2007) explains that an essential step to ethical research is for the researcher to acknowledge their positionality and how it shapes the production of knowledge. The concept of positionality is described by Misawa (2010) as, "the understanding that all identities are shaped by socially constructed positions of power and privilege, which influence how individuals interact with others and how they are perceived by society (Misawa, 2010, p. 26). My positionality as a white, Lesbian, academic, feminist woman influences how I interact with others, how and where I hold or lack power and privilege, how I relate to my research topic and the participants in focus groups, and forms my concept of what I consider to be a source of knowledge.

In terms of my relationship to my research topic and question, the biggest informant and motivator in this work has been my experience teaching as a trades pre-apprentice instructor. During my research, a woman shared a story about an experience she had as a learner in a trades pre-apprentice program. She shared that while she was in class, an instructor brought up sexism and racism in the construction industry and told students that not many Women of Color make it in this industry. The woman explained that the instructor then told a story of a Black Woman who was working on a job site and took a bathroom break only to have male co-workers shake the porta-potty while she was in it. The woman I spoke with explained the discomfort she felt being the only woman of color in the pre-

apprentice program asking me, “How did she expect me to feel after that?” (personal communication, anonymous, 2025).

This discussion reminded me of why I asked the research question I chose. As a feminist and a trades instructor, I believe that women and non-binary people teaching in trades pre-apprentice programs need to be having discussions that address the sexism we face. As a teacher, I have the power to address sexism in the program I teach within, learning how to reduce harm caused in those discussions along the way. As a researcher, I can invite other women and non-binary people teaching in programs like mine to have collaborative discussions on how to name the sexism that happens within the construction industry in a way that does not isolate those most severely impacted by that sexism and those impacted by the compounded harm of sexism paired with racism.

As a white woman, I am not impacted by racism combined with sexism, the way my colleagues who are non-binary people and Women of Color are. Duarte explains that to act from one’s social position in our unjust world, a researcher must, “identify their own degrees of privilege through factors of race, class, educational attainment, income, ability, gender, and citizenship, among others” (Duarte, 2017, p. 135). Because I am white, I do have the privilege of addressing racism without the fear of being directly impacted by racism in response. As an instructor, I hold a privileged position both within the learning space where I teach and in the construction industry. Additionally, I hold a full-time tenured position at a community college. Many instructors do not have union protections and/or have less instructional freedom i.e.; they must stick to a specific curriculum and are told what and how to teach.

Though I am a woman teaching in a trades pre-apprentice program, my journey into the program and purpose within it are different from my colleagues. Although I teach within a Carpentry training program, I do so as an Integrated Basic Education and Skills Training (I-BEST) instructor (SBCTC, 2026). My background and depth of knowledge is in teaching itself, specifically Math, English and job

readiness skills to adult learners. I came into trades education knowing how to teach but having to learn everything about the industry I teach within through my work.

In my work, I have been able to name and challenge the sexism that exists within the construction industry, without fear of retaliation or losing my job. I have discussions with co-teachers about sexism and racism I see playing out within our program and ask for help finding ways to address them. When seeking contractors to partner with our program, I usually start by asking, “Do you hire women?”. When union reps come to visit the classroom, I ask them to talk about how racism and sexism show up on commercial jobsites. I can do all of this with the confidence that I will likely not face negative repercussions. If I do, I know I will be protected by my colleagues, the dean I teach under, and the union I belong to. Those are privileges and safeties that not all women and non-binary people teaching within the construction industry hold.

The position I hold that makes me most vulnerable in my work, and, perhaps in my research, is being a Lesbian teaching in heteronormative, male dominated field. I am directly impacted by sexism in my work. I often feel isolated in my work as I am 1 of 2 women that teach in the Trades. Of 20+ Trades faculty, I am the only out Lesbian/ Queer woman. I believe that it is this vulnerability that allows me to more easily connect with students who are most likely to face discrimination in the field of construction. It is this connection, in part, that inspires my research as I hope to alleviate issues I face within my own work. I think about all the times, as a Lesbian woman among men, I feel the need to exist in the room as only part of myself. A few months ago, students were building a mock-up bathroom. When others were not around, a woman confided in me, “whenever the men in my group doubt me or don’t listen to me, I feel like I need to puff up and act like a man and I do not know why I do that.”. My internal response was to feel appalled by the realization that I, too, puff up when doubted by men in the program. I came into this work with the hope that participants would share ways they shrink themselves or show up entirely as themselves.

In my years of teaching within a trades program, I consistently find myself pushing back against pressure to teach with the intention of profit. Though we are not building projects in our labs overseen by contractors, with strict timelines and expectations of passing codes and meeting quality standards, we are preparing students to be able to do so in the future. My colleagues are teachers, like me, but as Chan's research (2020) pointed out, they are trades men teaching others to work in their trade. Though we are not working for homeowners or developers pushing a timeline and expectations on us, it sometimes feels like we need to teach as if we are. The more I veer away from the strictness of the curriculum and pressure to focus on hard skills, the easier it becomes and more widely it is accepted to teach not just the hard skills, but the skills learners need to succeed in and perhaps even change the construction industry.

I came into this research feeling hopeful that participants would not only share who they are as teachers, but ways in which they may be using education as a practice of freedom, as Freire (1970/2017) describes it, challenging the norms of the construction industry, leaving room for learners to do the same. When speaking to a critical component of feminist pedagogy being the mind/body split, hooks explains that "those of us who have been intimately engaged as students or teachers with feminist thinking have always recognized the legitimacy of a pedagogy that dares to subvert the mind/body split and allow us to be whole in the classroom, and as a consequence, wholehearted" (hooks, 1994, p. 193). It was my hope, when planning interviews, that I would meet new colleagues that would share the different ways that they engage wholly as themselves in the programs they teach within.

Wilson (2009) explains that an individual's position is not merely about their personal identity, but is rooted in their relationships with people, ideas, and the natural and spiritual worlds. By maintaining an awareness of my positionality in relation to each part of this research, from the literature review to the focus group facilitation and through the data analysis process, my hope was to gain and share additional insight that may otherwise be missed. I came into the research with the hope that this awareness may also allow me to reduce the harm that may be caused to participants through this research

process. I held on to that intention every step of the way, including throughout the interviewing and follow-up questions, keeping the reduction of harm in mind.

## Literature Review

Before diving in to find answers to my question, I pulled from sources that inspired and informed me in various ways, creating a backdrop for my research. I showcased research others have done around sexism in the workplace, highlighting how employment discrimination shows up in construction and impacts women and non-binary workers. I included a section providing background on trades education, further explaining the role and potential impact of trades educators in the construction industry. I concluded the literature review with feminist community building approaches, including guidance on facilitating discussions in focus groups, examining the impact of sexism in the trades on women and non-binary workers and exploring ways feminist community building practices can be utilized to push back against sexism in construction.

### Sexism in the Workplace

The labor force, in general, is a product of a sexist society that has, over the course of time, created systems of control, limiting who, based on identifiers including both race and gender, can work outside of the home, what industries which people can work in and what positions can be held by whom. It is important to acknowledge that the US labor system is deeply rooted in systems and structures of enslavement. The US economy was built to depend on the separation of Blackness from humanity for the dehumanization of African and Black American people for the purpose of trafficking, conditioning via torture, and forced labor (Kendi, 2016). The US economic and resulting labor systems were cultivated from settler-colonial ideals. Leigh Patel (2017) describes colonialism as viewing ownership of land as fundamental, with settler colonialism seeing humanity as hierarchical and the accumulation of land and material wealth as means to measure the hierarchy of existence.

Today's US economic system was built upon labor industries reliant on enslavement that dictated a human's purpose to be either to own property, or to be owned as property and used as a labor force.

Desmond (2019) demonstrates how the US economy's gains from enslavement of Black People created a dependency on the pervasive intentional dehumanization of the labor force. He explains that:

> What made the cotton economy boom in the United States, and not in all the other far-flung parts of the world with climates and soil suitable to the crop, was our nation's unflinching willingness to use violence on nonwhite people and to exert its will on seemingly endless supplies of land and labor. Given the choice between modernity and barbarism, prosperity and poverty, lawfulness and cruelty, democracy and totalitarianism, America chose all of the above (Desmond, 2019, p. 3).

The US's adherence to dehumanizing practices within its economic system was designed to and continues to operate to benefit white men at the expense of anyone outside of the narrow definition of what constitutes a white man (Zamudio, 2011), including all women and nonbinary people. As Zinn (1980/2003) phrases it, "the explorers were men, the landholders and merchants men, political leaders men, the military figures men. The very invisibility of women is a sign of their submerged status" (p. 104). People of Color and white women fight against a systemic role of exploitation within the US labor system.

Adding to this intentional invisibility for the purpose of exploitation that Zinn identifies, hooks (1994/2000) speaks to the same pattern of exploitation. She reminds her readers, "women are exploited economically in jobs, but they are also exploited psychologically. They are taught via sexist ideology to devalue their contributions to the labor force" (p. 103). Long before hooks' words, educator activist and Black Suffragette, Nannie Helen Burroughs gave over 200 speeches stressing the importance of autonomy and economic freedom for women. She founded the National Training School for Women and Girls and declared the motto: "Work. Support thyself. To thine own powers appeal" (Battle, p. 3). It is by design that women and non-binary people play such a small role in the construction industry, despite centuries of efforts to change that.

Hatipkarasulu and Roff (2011) use historical documents to look at how the experiences and representation of women in construction came to be what it is today. This study notes that, though evidence of women working in the building trades can be found as far back as the medieval ages, most accounts begin being documented in the early 1950's. Saujani (2022) draws attention to the many, often unaddressed elements of sexism in the workforce.

Suajani (2022) began in 1920, when the 19th amendment prohibited the denial of the right to vote based on sex. This granted white women the right to vote while Black Women, Native American Women, Asian American Women, and other non-white women were unable to vote until 1965, when the Voting Rights Act (VRA) was passed. The VRA prohibited discriminatory blocks from voting like poll taxes, mandatory literacy tests, grandfather clauses and disenfranchisement laws (Verhovek, 2025). Not only did the 19th amendment fall short in granting voting rights to all women, but white men also still made up 75% of the workforce. Efforts were then made to keep white women from entering the workforce. In 1932, for example, the Economy Act stipulated that only one member of any household can hold a job outside of the home (Saujani, 2022).

During WWII, white women joined the workforce in higher numbers to fill jobs left open by the demand for men to go work as soldiers. Saujani (2022) argues that soon after the war, the American confidence in a woman's ability to perform factory work dwindled, ideas around traditional gender roles returned, and white women returned to the home. Bellou and Cardia (2016), however, argue that the mobilization of white women into the labor force during WWII led to a permanent increase in the number of white women who left the home to join the workforce.

hooks calls attention to the racial divide that has been historically present in feminist labor movements. She explains that, in the women's liberation movement, middle class White women used their inherent social power, within a white supremacist value system, to amplify their own voices and emphasize the concept of work as a source of freedom for women who would otherwise be stuck in the

home as housewives. This dampened the voices of Women of Color and all poor working-class women who did not experience work as liberating but as exploitative and dehumanizing. Wealthier white (and I would add non-gay) women benefit from the sexist and racist structures of the labor force, either by landing more fulfilling jobs, or accessing gains from the living wages their husbands have access to. hooks argues that, for this reason, middle-class white women, who dominate mainstream feminist movements, are not likely to challenge the labor industry's patriarchal and exploitative ways (hooks, 1994/2000).

***Women in Construction***

The number of women in construction is still minimal. This has not gone unnoticed. As mentioned, multiple federal and local government agencies, entities, and non-profit organizations have taken measures to address the dominance of men in the construction industry, especially those holding skilled labor positions or, with tools in hand. The National Women's Law Center (NWLC, 2014) details that in 1976, they sued the US Department of Labor for violating Executive Order 11246 by neglecting to hold contractors of federally funded projects accountable for employment discrimination. Executive Order 11246 prohibits contractors who do over $10,000 in government business from participating in discriminatory employment practices based on race, religion, sex, or national origin. From the lawsuit came the formation of Federal Contract Compliance Programs (OFCCP), the U.S. Department of Labor agency responsible for upholding the executive order 11246. The OFCCP set up several measures intended to integrate women into construction, including a goal, mentioned by Eisenberg prior, to increase the participation of women working on federally funded construction sites to 6.9% of the workforce (NWLC, 2014; Eisenberg, 1998/2018).

In 2023, the Biden Administration launched an initiative to increase the number of women working on jobsites for federally funded projects, offering incentives to employers in the chip manufacturing and construction industries. To qualify for incentives, the initiative required employers to prove they will meet the Department of Commerce's and the Department of Labor's 2022 Good Jobs

Initiative's (GJI) Principles. The GJI Principles provide guidance on eight areas: Recruitment and Hiring; Empowerment and representation; Benefits; Pay; Job Security and Working Conditions; Organizational Culture; Skills and Career Advancement; and Diversity, Equity, Inclusion and Accessibility. The initiatives ask that companies seeking at least $150 million in funding submit a plan to provide childcare for workers (US Office of Public Affairs, 2023).

Biden's Secretary of Commerce, Gina Raimondo, also launched an initiative to double the number of women on federally funded job sites (NAWIC, 2023). Two years after this series of Biden Administration initiatives, the 2025 Bureau of Labor Statistic surveys showed that only 3.5% of construction jobsite laborers surveyed were women, which is a drop from the 2023 findings of 4.5% mentioned previously (US Bureau of Labor Statistics, 2025). In 2025, Donald Trump issued Executive Order (EO) 14173, which rescinded all the previously mentioned goals geared towards increasing the number of women working on construction sites. Since the EO was ordered, another notable drop in numbers of women in construction has been in the management positions, which dropped from 10.5 percent in 2024 to 8.5 percent in 2025 (Hegewisch, 2026).

### *Sexism in Construction*

Eisenberg (1998/2018) interviewed 35 women who entered the construction field in the late 1970s and, some, who stayed for decades. Eisenberg focuses on women who entered the trades shortly after the formation of the OFCCP, following the Department of Labor's subsequent regulations requiring women to be hired on federally funded projects in 1978. Shedding light on lived experiences, interviews highlight the transition from the excitement of being part of a huge cultural shift to disappointment and defeat, decades later, when no shift had happened**.** In her 2018 reprinting of the book, Eisenberg (1998/2018) reflected on the persistence of sexism in construction, despite decades of advocating for policy change. She describes her sense of disappointment that, "the stories of pioneer trades women who began their careers as electricians, iron workers, carpenters, plumbers in the 1970's and early 80's remain as current and familiar as they do" (Eisenberg, 2018, p. ix).

Beyond political landscapes and systems of exclusion, harassment has had, historically, and continues to have a significant impact on the experience of women and non-binary people in the workplace. Women and Non-Binary People of Color remain uniquely and exponentially impacted by workplace harassment in the US, dating back to the abuse and torture faced by Black Women forced into slave labor from the 1600's. Guy-Sheftall (1995) gives context to how fights are intertwined for Black Women within the labor movement. She explains, "It was the horrendous circumstances that enslaved African women endured since 1619, not the abolition movement, that inspired their first yearnings for freedom and rebellious spirit" (Guy-Sheftall, 1995, p. 2). Guy-Sheftall recognizes that many Black Feminist historians credit the movement to eradicate slavery, naming leaders including Sojourner Truth, for the emergence of the women's rights movement.

The EEOC defines sexual harassment and its illegality in saying, "it is unlawful to harass a person (an applicant or employee) because of that person's sex. Harassment can include 'sexual harassment' or unwelcome sexual advances, requests for sexual favors, and other verbal or physical harassment of a sexual nature" (U.S. Equal Employment Opportunity Commission, 2025). A 2023 study (Heaton and Riddle, 2023) found that 50% of women in all workplaces experience sexual harassment. A separate study pooling from multiple studies found that more than two in five employed women United States have experienced sexual harassment or assault in the workplace (Raj et al., 2020). Both studies note that, although evidence points to a higher likelihood of harassment in fields with high gender disparities, lack of formal reporting within industries and missing research makes data points hard to find. An EEOC study done from 2010-2015 did find, however, that women are 27 times more likely to report harassment than men within the construction industry (Center for American Progress, 2028).

Perhaps one of the most notable cases of workplace harassment, in terms of media coverage, was the testimony of law professor Anita Hill against the Supreme Court Justice nominee and Hill's former employer at the EEOC, Clarence Thomas. Shortly after Hill's testimony, Crain and Heischmidt (1995)

urged employers to review workplace discrimination laws and make adequate efforts to prevent workplace harassment. Crain and Heischmidt cite Hill's testimony as being a pivotal point of workplace discrimination because it resulted in a rise in women speaking out against sexual harassment in the workplace. Anita Hill's testimony and the resulting lack of consequences faced by her perpetrator, Clarence Thomas – who remains a supreme court justice, are demonstrative of a professional culture in which men continue to rise through the ranks and receive professional accolades, power, and advancement at the expense of the safety and professional growth of women. This is especially true, in this case and many others, for Black Women.

Hegewisch & Mefferd surveyed 2,635 tradeswomen and non-binary workers. The study highlights the effects of harassment and discrimination on the women/non-binary people surveyed, especially the Workers of Color among them. The study found that 23% of those surveyed reported that they "always" or "frequently" experience sexual harassment on the jobsite including seeing images degrading women in the form of pornography or graffiti at worksites, which 26.9% of respondents reported (Hegewisch & Mefferd, 2021, p. 5).

Bassett (2016) conducted interviews with 44 Oregon construction workers. Bassett found that persistent harassment existed on most jobsites and was widely attributed to a mix between interpersonal and institutional dynamics. Those with power within groups of interviewees tended to frame harassment as an interpersonal issue needing employee-based solutions to occur over time while those who were not in positions of power expressed views of harassment being a mostly institutional problem, requiring industry-wide cultural changes. A need for comic relief in a high-stress work environment, generational differences, and a culture that commonly accepts hazing behaviors as rites of passage were all cited by participants as underlying contributors to frequent harassment.

Bassett's study paints a picture of an environment in which discrimination and harassment are not taken seriously or addressed efficiently and effectively. In a 2022 study, Curtis et al. dig deeper into unaddressed and persistent workplace sexism, focusing on occupational health and environmental safety.

The study drew information from a focus group with 19 tradeswomen in Washington State. Researchers found that information shared by focus group participants exposed significant threats to physical and psychological health and safety posed by discrimination against women in construction. Findings noted a lack of properly fitting personal protective equipment (PPE), fear of layoffs as retaliation and gender discrimination as key proponents of harm (Curtis et al., 2022). Burrows (2023) also points out the workplace danger presented in the harm done to women and non-binary people, citing factors such as increased risk of accidents when workers are distracted by harassment.

The Harry Bridges Center for Labor Studies (2024) describes the impact of harassment on workers saying, “harassment, retaliation, and the fear of both at the worksite may affect women and gender non-conforming people’s mental and physical health, further contributing to a lack of representation of women and gender non-conforming people in the construction trades” (p. 3). Both the Hegewisch & Mefferd (2021), and Curtis et al. (2022) studies named acts of retaliation, and failure to respond adequately, in a timely manner, or at all to reports of discrimination and harassment as significant barriers to enforcing discrimination laws. This lack of action takes away hope for workers seeking to change the culture of the industry.

Efforts to expose the realities women and non-binary workers face in the construction industry are often intertwined with intentions of bringing women into the industry. Burrows (2023) expresses concern for the impact the construction industry’s lack of women will have on the economy and the long-term success of the industry, which is, “facing recruitment challenges and an aging workforce at the same time that demand for new construction is surging” (Burrows, 2023, p.2). Burrows suggests “Leveling the playing field for people of all backgrounds seeking to enter the industry and fostering safe, welcoming, and inclusive work environments will help ensure that careers in construction are open to all” (Burrows, 2023, p.2).

Burrows acknowledges that “discrimination in recruitment, apprenticeships, and hiring blocks access to good-paying construction careers while unequal treatment in the terms and conditions of

employment—including training, hours, and work assignments—hinders advancement and pushes many women and workers of color out of the industry" (Burrows, 2023, p. 3). As the National Center for Construction and Education Research (NCCER, 2025) points out "Recruitment and hiring efforts have brought more women into the industry, but those efforts don't guarantee that women will stay" (p. 5). When effort is focused on bringing women and non-binary people into the construction industry without first transforming the sexist systems of the industry, women and non-binary people are left harmed. This is especially true for Women of Color, who end up being required to do additional labor, forced to spend energy educating others about their experience, often being asked to join additional panels, committees or watch groups (Lorde, 1984/2007).

Having women and non-binary people on jobsites for superficial purposes, as brown explains, deflects from the need for deeper systemic work and community building (brown, 2017). This perpetuates the harm done as it neglects to divert our employment system from its historical intent, which is to, as hooks phrases it, exploit and devalue the labor of women and non-binary people (hooks, 1994/2000). Though government initiatives may bring more women and non-binary people into construction jobs, the sexist discrimination and harassment described by several accounts (Boroughs, 2023; Eisenberg, 1998/2018; EEOC, 2022; Curtis et al., 2022) will likely cause women and non-binary people to leave the industry. Workers are not likely to stay in a system that harms them, or recommend others to join, and women and non-binary people (though non-binary people are not counted in statistics) will remain as 3-4% of the construction labor workforce.

### *Trades Education*

Trades education is one rung of the ladder leading to careers in the trades. To create a background for a better understanding of the trades education programs that act as a feeder system for the construction industry, I clarify various systems and processes of construction trades. The two women I mentioned who attended the 2020 Women in Trades conference were studying in the Carpentry pre-apprentice program I teach within. The Women in Trades conference we attended was geared towards women working in or

preparing to work in the construction trades. The "construction trades" and the "construction industry" are umbrella terms that refer to building jobs that exist in the US and employ around 8.5 million workers (U.S. Bureau of Labor Statistics, 2024). As Charlotte Burrows (2023) explains in her Equal Employment Opportunity Commission (EEOC) report, "Construction workers build and repair our homes, the roads and bridges on which we travel, and the utilities that power our daily lives. It is also one of the country's largest industries (sic)" (p. 3). Construction trades workers are those that participate in the hands-on building of our structures and environment and include carpenters, plumbers, electricians and masons, lumber procurers, among others (Wagner & Kulweic, 2020).

Discussions of the construction trades and construction workers often refer to workers on large commercial jobsites like bridges, schools or large apartment complexes. This area of construction is called commercial construction. Skilled trade workers in crafts like carpentry, masonry, plumbing, roofing, painting and drywall, for example, may also work on smaller homeowner projects like building or remodeling single family homes. This area of construction is called residential construction. In WA State, large public works projects require, by law, a Project Labor Agreement (PLA) to be made mandating contractors to utilize union workers. Because of this, in WA, commercial workers are typically represented by labor unions, which require participation in apprentice programs, while residential workers typically are not represented by such unions.

### *A History of Trades Education in the US*

In her recent visit to the program I teach in, a local Union Representative explained that, to get bids for jobs and stay in business, residential contractors cannot keep up with the costs of wages and benefits union workers would demand. Government contracts, however, can afford to require workers to be unionized while most homeowners would prefer to take the lowest bid, rather than guarantee worker wages and conditions (Marx. L., August 14, 2025, personal communications). The construction pre-apprentice program where I teach prepares students for jobs in both commercial and residential construction.

O'Banion (2018) explores the history of work-training programs within community colleges beginning in the 1600s, going through the late 1900s. He explains that from the settlement of English colonies, to the middle 1880s, apprenticeship training was the established formal method of job training. Experiments in Northern Europe inspired manual training schools for boys, like the Massachusetts Institute of Technology. The trade school movement emerged shortly after, creating a more comprehensive manual training program that paved the road for the technical colleges we have today (O'Banion, 2018).

The late 1800s gave way to what is commonly called the "Industrial revolution", and a time of rapid change for the American economic system and, in turn, the US education system. Trade schools broadened, guided by the demands of business and industry. Agriculture and home economics education were added to workforce education objectives (O'Banion, 2018). This increased the commitment to industrial education that led to the 1906 formation of the National Society for the Promotion of Industrial Education, a collaboration of workforce training organizations advocating for federal support. The group later merged into the American Vocational Association, now known as The Association of Career and Technical Education.

Hillison (1995) explored the unique partnerships behind the passage of the Smith-Hughes Act of 1917, a bill which provided federal support for vocational education, exposing the spectrum of interests that led to the federal support of trades education. The act promoted vocational education in agriculture, trades, industry, and homemaking, providing federal funds for this purpose. Among the large range of the act's supporters were the American Federation of Labor (AFL), an organization of skilled laborers who wanted their children to graduate high school but feared it may lead them to go to college and leave the working class central to AFL members' identities. Vocational programs in high schools, however, kept children in school while gaining technical labor skills. Other advocates for the bill included the American Home Economics Association (AREA) and the Chamber of Commerce.

While advocates for vocational programs in high schools argued for the purpose of high school education, at least in part, to be to prepare students for work after graduation, O'Banion brings light to the commonly debated intentions of what higher education, specifically in community colleges, is meant to do. He explains that, while many community college educators are driven to prepare students to become successful employees and land jobs, others are preparing students to "live a full life" (O'Banion, 2018, p. 3). In the 1980s multiple critics of workforce education, including the National Commission of Excellence in Education, began publishing work casting a critical lens on both trade school and high school workforce training programs, demanding schools create more academically competitive opportunities. The efforts resulted in a nationwide increase in stronger admissions criteria for colleges and increased student assessments in high schools. Higher education institutions began to see lower enrollments in career and technical programs, and shifted focus away from CTE programming (O'Banion, 2018).

Though the country faced a general shift favoring four-year colleges for career preparation, workforce education programs, often referred to as Career and Technical Education (CTE), have been rising in popularity in the US education system for the last decade. This is especially true in high school education (Huebeck, 2025). Rising costs of colleges, increased industry demand, and an available job market are all reasons for the increase in high school CTE programs (Thomas, 2019).

According to the National Center for Education Statistics, in 2023 1.5 million students were enrolled in Trade Schools across the United States and an additional 2.5 million enrolled in technical/vocational education programs outside of colleges and universities. 98% of US public-school districts offered CTE programs to students at the high school level. Of the programs available to students, 83% were run at traditional high schools, 35% at 2-year community or technical colleges, and 11% at 4-year colleges or universities. 43% of the programs offered were located at CTE centers, where school districts pool resources for a central location for students from one or more local school districts (U.S. Department of Education, 2018). Popularity has risen so much that school districts, colleges and CTE

centers are finding it difficult to hire enough instructors to keep up with the student demand for CTE programming (Heubeck, 2024).

### *Pre-Apprentice Programs*

While CTE programming, in general, aims to prepare learners with specific skills to be used in the workforce, construction-driven CTE programming is often tied to partnerships with local apprentice programs. A pre-apprentice (PA) program is a "training and career exploration program that prepares individuals to enter and succeed in a formal apprenticeship" (US DOL, n.d.. p. 2). In WA State, there are 50 official Labor and Industry (L&I) Certified PA programs, often referred to as Pre-apprentice Career Training Programs (PACT). L&I ensures that PACT programs provide on-the-job training in conjunction with related classroom instruction, all under the supervision and mentorship of a journey-level professional (Washington L&I, 2025).

PA programs provide extra support and training for folks who are not ready to join an apprentice program or work in residential construction (Oettinger & Hebbar, 2019). PA programs introduce people to the culture of the trade they want to work in, integrate math, reading and writing skill-building into industry-specific content, and provide job-skill training (Cheney, 2019). PA programs can be run by community colleges, high schools, non-profit organizations and union apprentice programs with varying durations, requirements and skills covered (Voeller, 2022).

UW's Harry Bridges Center (2024) examines the role and potential of pre-apprentice (PA) programs in improving workforce equity within the construction industry. The report draws upon unemployment data highlighting disparities regarding race, gender and sexuality. Data is based on industry projections and findings from surveys of pre-apprenticeship organizations and pre-apprentices conducted by the Regional Pre-Apprenticeship Collaboration (RPAC). Major findings from the report concluded that, although PA programs can reduce racist, sexist and homophobic employment exclusion, additional funding is needed to recruit, retain, and provide job placement and workplace support for pre-

apprentice participants. The report also calls for growth of collaboration between pre-apprentice programs and employers. PA programs are touted as a method of building confidence to prepare people to work in environments where they are underrepresented, with many participants becoming the only or one of few women or non-binary workers on a job site when they graduate the PA program (Oettinger & Hebbar, 2019).

Wagner and Kulwiec (2020) determined PA programs to be pivotal in providing entry for women into trades occupations. PA programs expand the construction industry workforce by offering support and education to workers who are not ready to enter the trades workforce on their own (Oettinger & Hebbar, 2019). They provide an opportunity to create a more skilled workforce by offering training without the pressure of the jobsite (Cheney, 2019). Through these programs, the sexism and workplace discrimination found throughout the construction industry can be critically examined and addressed (Harry Bridges Center for Labor Studies, 2024). For these reasons, women and non-binary instructors who have experience teaching in pre-apprentice programs provide critical insight into how to increase the impact of pre-apprentice programs on the sexist and discriminatory culture of the construction industry.

### *Apprentice Programs*

The purpose of PA programs is to prepare potential apprentices and connect them to union apprentice programs within their respective trades. Union apprentice programs, as the US Department of Labor's (DOL) puts it, "combine paid on-the-job training with classroom instruction to prepare workers for highly skilled careers" (DOL, n.d.). PA programs prepare learners for employment while apprentice programs offer training while learners are already employed as apprentice-level construction workers. Workers learn as they earn, receiving on the job training while working for construction contractors that maintain contracts with local labor unions.

According to a study done in support of the DOL American Apprenticeship Initiative program, 84% of construction pre-apprentice participants go on to become apprentices in registered union programs(n.d.). Though construction trades and unions may operate differently, apprentices are typically

required to complete a specified number of training hours and receive guidance from journey level workers. Contractors pay apprentices according to the negotiated terms of the union bargaining agreement (DOL, Apprentice Program, Retrieved 9/8/25). When a worker is hired as an apprentice, they become a member of their union. Apprentices work up the pay scale determined through union bargaining agreements. After apprentices complete the final level of the apprentice program, workers have graduated from the apprentice programs and become Journey Workers (commonly called journey men), earning higher wages, and becoming responsible for training new apprentices (WSCTF, n.d.)

### *Teaching in Trades*

In-depth knowledge of their trade and skills required and ability to teach were noted as primary preferred attributes of vocational educators both in the literature review and results of student surveys. This same need for instructors to have in-depth knowledge of their field is echoed in the program I teach within. Student feedback often praises instructor knowledge (Zinn et al., 2021). This aligns with my personal experience participating on hiring committees for trades instructors where in-depth knowledge of specific trades is a listed job requirement for instructors.

Ryökkynen (et al., 2019) found students to have more positive interactions with educators who prioritized student learning. Specifically, instructors should be aware of current industry needs, address individual learner needs, and ensure student competency in industry-driven skills (Ryökkynen et al., 2019). As an instructor in a trades program, I came into this research wanting to explore what soft skills instructors are identifying as needs of the industry, and how they are teaching them. I was also curious as to how soft skill instruction could be used to acknowledge and address the harsh realities of the construction industry and its track record of discrimination and harassment.

As mentioned above, the demand for CTE instructors has increased in recent years faster than programs are able to hire them (Heubeck, 2024). Recent news reports cite a shortage of skilled trades

workers due to workers retiring faster than entering the field (in my workplace, we call this the “silver tsunami”). Additionally, the ability for schools and training programs to provide salaries that compete with jobs within the fields and difficulty finding people that have the skills, experience, desire and ability to teach in a formal setting are barriers (Richards, 2025).

While my background is in teaching and my work in trades required me to learn industry standards on the job, most trades instructors have the opposite trajectory, becoming an expert in their industry field, with programs commonly requiring journey or foreman level experience and are forced to learn the teaching part on the job (personal communications, n.d.). Trades instructors at pre-apprentice programs are recruited from local unions, construction related conferences and events (Voeller, 2022). The interview process to hire instructors into trades pre-apprentice programs typically require questions about industry knowledge and demonstration lessons on topics relevant to the trade (personal communication, Instructor Interview Panel Participation, 2021). Without a competitive salary to offer, skilled trades workers may find little incentive to leave the field where they have developed expertise and enter into a new (academic) environment that requires learning a new skillset.

In the study from New Zealand, Chan (2009) pulled data from a survey of trades professionals who transitioned into tutoring within skilled trades programs at a New Zealand technical institute. Tutors had varying levels of experience in trades education from a variety of crafts including automotive, building/carpentry, butchery, electrical trades, engineering/fitting & turning/welding, painting and plumbing. All participants stated they had extensive experience in their fields (Chan, 2009).

Chan (2009) received responses from 13 tutors to questions examining not only their motivation to transition to teaching in a formal setting but also how teaching in a college compares to jobsite training and how participants form identities as trades instructors. When asked about their motivation to move from the jobsite to formal teaching, most instructors cited a genuine interest in teaching their trade to

young people and to share what they had learned through work experience. Another common motivation was to have a less physically demanding workload.

Chan's study found that, compared to training colleagues on a job site, participants found major differences when formally teaching. One example is the increased number of students, as they were teaching a class of students, rather than training one or two new colleagues. Participants also found that, though the classroom did not offer as many authentic opportunities for work-based learning as a jobsite, there was less pressure from commercial imperatives like finishing a project on time, for example. When asked about creating an identity as a trade instructor, participants indicated the need to identify as a trades professional rather than a teacher (Chan, 2009).

Chan (2020) connects the importance of pedagogy in trades education, describing a vocational education pedagogy as ensuring that students learn as they become**,** with the intended outcome being a learner's realization of a specific occupational identity. She introduces several frameworks useful to trades educators including those focused on utilizing muscle memory as a teaching tool, for example. Chan emphasizes the need for trades educators to implement comprehensive pedagogies when teaching in the skilled trades. To make an impact on the sexist culture of the construction industry, women and non-binary trades instructors must look beyond teaching the physical skills when connecting with students. When women and non-binary instructors go beyond teaching the physical skills of a trade and apply pedagogies and practices rooted in social change, they stand a better chance of pushing students to become agents of change within the construction industry (brown, 2017; hooks, 1994).

Brock and Freire also offer pedagogical practices that center identity and growth of self in the learning process, as Chan mentioned, but connected to social change driven education, rather than Trades education. Speaking specifically from the lens of Black Feminist pedagogies and teaching approaches, Brock advises that "education should provide students 'care for their being' with a pedagogy that teaches love of self and others, inner strength, humanity and humanness, survival and struggle and hope and

knowledge" (Brock, 2019, p. 19). In the world of higher education, Freire is often held up as a seminal voice in educating to create social change. He explains that "education as the practice of freedom—as opposed to education as the practice of domination—denies that man is abstract, isolated, independent, and unattached to the world; it also denies that the world exists as a reality apart from people" (Freire, 1970/2017, p. 54).

Alongside critical pedagogy like that of Freire, feminist theories on social change can inform how women and non-binary people teaching in trades can push back against the sexist systems. Incorporating lessons of love of self and self-confidence is one way that I prepare women and non-binary aspiring trades workers with emotional strength that I hope will aid them in pushing back against the sexist culture they will likely encounter in the construction industry. I entered this research hoping to learn how trades education can be utilized as a means of social change.

**Nurturing Sisterhood and Building Solidarity**

To better understand the sexism that is a cultural entity of the construction industry and how to challenge and push against it, feminist theories provide frameworks of understanding sexism, how it functions within the labor industry, and ways to organize and fight against it. Theory is a necessary tool, as hooks advises, and a liberatory practice that can be used to deconstruct systems of oppression (hooks, 2014/1994). hooks frames feminism as, "a movement to end sexism, sexist exploitation, and oppression" (hooks, 2000, p. viii). By feminist theories, I am specifically referring to theories and thinkers that guide women and non-binary people in methods of ending sexism, sexist exploitation and oppression (brown, 2020; hooks, 1994; hooks 2000; Lorde 1984/2007; Wheatley 1998; Gonzales & Shotton, 2022). Feminist theory and resulting feminist community building practices provide a lens for looking at how women and non-binary instructors teaching within the construction industry can organize, challenge and create change within the greater construction industry from the labs and classrooms they teach in. These feminist theorists provide reminders of the exponential sexist systems and cultures have on women and non-binary

people of color. As both Lorde (1984/2007) and hooks (2014/1994) address, this impact is perpetuated and intensified when advocacy focuses only on obtaining equal opportunities and not on restructuring societal systems that are inherently sexist and racist. Feminist theories can also provide perspectives on how to facilitate, interpret and navigate discussions in focus groups and discussions related to disrupting sexist behavior and preventing/ mitigating harm caused to women and nonbinary students pursuing careers in construction.

Women and non-binary people stand to benefit from the economic gains of the construction industry, obtaining jobs with competitive pay and the benefits and protections union work offers (Walton & Gardiner, 2022). Lorde (1984/2007) asks, "What does it mean when the tools of a racist patriarchy are used to examine the fruits of that same patriarchy?" She then reminds us, "It means that only the most narrow parameters of change are possible and allowable" (pp.110-111). If women and non-binary people seek the benefits of the construction industry but the systems of sexist, racist and homophobic discrimination are not challenged, not much will change within the construction industry. Women and non-binary people teaching in construction trades training programs have some power to create change within the system, as we are teaching future generations of trades workers. If women/non-binary trades educators accept those competitive wages and union protections as sufficient markers of success within a sexist system that we are not challenging, not much will change. Women (and non-binary people, when counted) will remain under 5% of the workforce, as we have for the past 30 years and even less, for women and non-binary workers of color (Harry Bridges Center for Labor Studies, 2024).

Gonzales and Shotton (2022) offer a definition of the term "coalition" that pushes against the element of splintering that hooks mentions. They define a coalition as "a diverse group of people that come together, decenter their own needs, and work across differences in hopes of facilitating a more expansive justice for all" (Gonzales & Shotton, 2022, p. 541). Gonzalez and Shotton elaborate that coalition work aims not just to unite and decenter personal priorities and needs, but members of a

coalition intentionally make efforts to acknowledge and challenge how we have benefitted from, internalized, and perpetuated harm (Gonzales & Shotton, 2022, p. 541).

Wheatley (1998) brings to light the tension between two natural driving factors of living beings: self-determination and the need for community. Wheatley points out that ecosystems are examples of diverse beings living together synchronously and cites them as inspirations for communities that embrace and nurture both driving factors. Wheatley explains that when communities focus on conformity, rather than everyone's unique value, energy shifts towards controlling one another. Rather than working together, community members begin to self-isolate and splinter into homogenous cliques that further embrace conformity over community (Wheatley, 1998).

Lorde (1984/2007) echoes Wheatley's message of embracing diverse community ecosystems. She explains, “Difference is that raw and powerful connection from which our personal power is forged” (Lorde, 2007, p. 112). In the same breath, she also speaks to hooks’ observation of White supremacist values as a force of division, adding to hooks’s list of those who are othered within popular feminism, naming, “those of us who are poor, who are lesbians, who are Black” as identities forced outside of feminist communities (Lorde, 2007, p. 112).

Also speaking to the division White supremacy has caused within feminist communities, *Building Coalition Consciousness* (Keating, 2005) reflects on the practice of feminist conscious raising, offering an alternative term with a different approach to the practice that focuses energy away from building coalition through commonalities. Keating points out that the traditional method of feminist consciousness raising, which builds community through identifying commonalities, isolates those who, as Lorde (2007) puts it, “Stand outside of the circle of this society’s definition of acceptable women” (p.110). Both Keating and Lorde draw attention to the isolation of queer women, poor women, Women of Color, and those of us who hold two or more outside identities.

Lorde (1984/2007) points out that women who are not middle class straight White women or otherwise deemed a socially acceptable category of women survive by finding strength in differences. Lorde also speaks to the vital role community plays in creating social change when she cautioned:

> As women we have been taught either to ignore our differences or to view them as causes for separation and suspicion rather than forces for change. Without community, there is no liberation. Only the most vulnerable and temporary armistice between an individual and her oppression. But community must not mean shedding of our differences, nor the pathetic pretense that these differences do not exist. (Lorde, 1984/2007, p. 112)

Keating offers a variation of traditional feminist consciousness raising groups that builds solidarity across lines defined by the variation of lived experiences of oppression. Lorde speaks to this same concept as it applies to communities of women, urging the acknowledgement of differences, rather than bonding solely on commonality.

As Lorde advises, community is needed for liberation. When speaking to the power of feminist community for trades instructors pushing back against sexism, Wheatley inspires the embrace of diversity of community, as seen in ecosystems do in nature. hooks encourages the examination of the threat of White supremacy as a dividing force, barring Black women from accessing benefits White women have access to. Lorde inspires the acknowledgement of both the need for diverse communities and the threats of White supremacist values on communities. Feminist community building is thus a powerful tool for women and non-binary people teaching in trades pre-apprentice programs seeking liberation from the harm and exploitation of sexism within the construction industry, and for modeling that liberation for students.

**Fractals as Theory**

To explore methods and elements of feminist community building that challenge patriarchal and neoliberal value systems, building comradery across differences in experiences of oppression, rather than

commonalities of participants, I reflected on brown's work. Inspired, in part, by Wheatley's work drawing inspiration from nature's diverse ecosystems in her approach to community organizing, brown looks at ways to mend divides that prohibit community building efforts from reaching their potential.

In *Emergent Strategy* (brown, 2017), brown defines emergent strategies as "ways for humans to practice complexity and grow the future through relatively simple interactions" (brown, 2017, p. 20). Each element of emergent strategy depicts an ability earth's plants and animals portray that humans can replicate as tools for social change. brown introduces the element fractals as a means to create change in larger systems starting from smaller scales. I find the idea of large systems change driven by changes within smaller entities of a system inspiring, as I often feel a sense of defeat by the size of the construction industry, the severity of the sexist harm done both on interpersonal and systemic levels, and the lack of power I sometimes feel in my position as an instructor. The idea of looking to systems of nature for inspiration is refreshing and hopeful.

brown brings to life the concept of looking to nature as a guide for permanent social change in saying,

> Matter doesn't disappear; it transforms. Energy is the same way. The Earth is layer upon layer of all that has existed, remembered by the dirt. It is time to turn capitalism into a fossil, time to turn the soil, turn to the horizon together (brown, 2017, p. 21).

Elements of nature have been functioning together as a community and changing longer than humans have, for the reason, I trust the potential impact of theories rooted in processes of nature when approaching challenges of social change.

All the elements of emergent strategy are interconnected and relevant ways to approach my research question, as each draws social change strategies from processes occurring in nature. According to the US Census, over 2.2 billion dollars was spent in construction from January through May of 2026 in the US alone (U.S. Census Bureau, 2026). The construction industry is huge, embodying systems

stretching across government agencies and corporations, accounting for 4.5 percent of the country's gross domestic product (GDP) within the first quarter of 2026 (U.S. BEA, 2026). I am just one person and, the last time I counted, there were about 60 students in the construction preparation program I teach within. I chose to focus on just one element of emergent strategy, fractals, because it acts as a framework of hope for making change within such a large system while being such a small piece of it.. The concept of fractals looks at the relationship and connection between small and large systems, modeling how large systems can be influenced and changed by acts from a small part of the system. This reminds me of the role of trades educators within the larger construction industry, and our power to challenge and change the sexist culture of construction by the way we teach and act in classrooms and labs.

Ferns are an example of a fractal, as are cauliflower, blood veins/vessels and river systems. They look the same on any scale and are images of how patterns of the universe repeat at scale (brown, 2017). brown uses fractals as a blueprint for creating social change explaining that, "there is a structural echo that suggests two things: one, that there are shapes and patterns fundamental to our universe and two, that what we practice on a small scale can reverberate to the largest scale" (brown, 2017, p. 52). To apply this concept to methods of social change, brown uses a guiding quote from her mentor, Grace Lee Boggs, advising, "transform yourself to transform the world" (brown, 2017, p. 28). brown explains that, though large systems often dictate what our status quo is, we cannot make those systems what we want them to be if we are not first living those desired changes on a local level.

Though I do not recall a specific time I heard it and I cannot name a specific person who said it, when I think about how I am expected to prepare women and non-binary students for the construction industry, the phrase "just keep your head down and do your job" comes immediately to mind as a driving sentiment. It could be that it has been said directly to me by one or multiple people. It could also be an intentionally unspoken expectation of me as a teacher to maintain the status quo culture of the construction industry. The concept of fractals makes me think of the power all the small pieces of this one industry have, not just to create change, but to maintain systems of oppression. I think of times these

teachers and mentors witnessed sexism and/or racism occurring in their learning spaces without addressing them. I think of what I have done to maintain systems of oppression within the program where I teach.

Brown reminds us that patterns repeat at scale whether we are changing or repeating them. She explains, “How we are at the small scale is how we are at the large scale” because “The patterns of the universe repeat at scale (brown, 2017, p. 52). Trades educators are contributing to the culture of the construction industry, whether we repeat patterns of oppression or challenge and change them. In embracing fractal theory in this work, I am inviting trades educators to acknowledge the patterns we maintain or create and encourage communities of support in this work. I had to come to a place where I knew the status quo of the construction industry was a pattern of discriminatory behavior and that I wanted to push against it. Even after that, there were times that I still stood by idly as I felt that these waves were too strong for me alone to push against, and I feared I may be swept under. There were times I was too tired to respond when a male student blatantly took the power from a woman or non-binary student in the classroom or lab or when it was the end of the day and a man explained to a woman something I knew she could do with her eyes closed.

Wheatley (1998), who brown names as one inspirer for Emergent Strategy, notes that, “as a system forms from such co-evolutionary processes, the new system provides a level of stability and protection that was not available when individuals were isolated” (p. 2). Perhaps, if I had other women and non-binary instructors that I felt community with, I would have the strength to live the patterns I wanted to see echoed, and my behavior would not stand alone against waves, but would be a part of a chorus of those echoing the same responses to similar behaviors in their own labs and classrooms. Fractals are not just a model for change, but a reminder of a trades educator’s role within the sexist systems of construction, whether we acknowledge that or not and a call for community in creating patterns of change that echo upward. For these reasons, I focused on fractals for my binding theory, guiding research practices and analysis.

# Methods

## Qualitative Research Methodology

In this work, I adhered to a qualitative research methodology. Wilson (2008) describes methodology as "the science of finding things out," asking the question, "How do I find out more about this reality" (p. 34). Denzin and Lincoln (1994) describe qualitative research as focusing on multiple interpretive methods that use a natural approach to research with participants. Patel (2016) explains that critical approaches to qualitative studies push for a research lens that permits multiple perspectives to dismiss the colonial notion of objectivity and the forming of generalizations. Choosing to interview multiple people allows for multiple perspectives, as recommended by Patel. One-on-one interviews allowed trust and comfort to be built more quickly, while an additional focus group allowed multiple perspectives to engage with one another, adding nuance.

When planning this research, I had originally intended to conduct at least 2 focus groups, each composed of 5-10 members each, with up to 20 participants in total. However, I was having difficulty organizing focus groups and gaining interest among potential participants. I found that a more approachable method was to first conduct one-on-one interviews. More participants responded to invitations once I changed the intention from focus groups to one-on-one interviews. After I had scheduled 8 individual interviews, I invited those who had responded to invitations that I had not yet interviewed to instead join the scheduled focus group. Three participants felt comfortable joining the focus group prior to having a personal interview.

I conducted one-on-one interviews with 8 women and non-binary trades educators. Of the one-on-one interviews, 6 were conducted on Zoom, one was done in-person in an office outside of the carpentry shop where I teach, and one chose to answer the questions in writing, via email. I invited all of the instructors I had interviewed and a few instructors I had not been able to schedule an interview with to an evening focus group session. I conducted just one focus group with 5 participants present. Two women who attended the focus group session could not make a one-on-one interview with me. In total, I spoke with 10 women and non-binary educators.

I started by sending out invitations to groups and organizations focusing on either trades instructors or women and/or non-binary people in trades. I began, first, by inviting interested participants to scheduled focus groups. When no one responded, I rewrote invitations, asking trades educators to join me for individual interviews, which rendered 2-3 responses per post. I sent invitations to two groups. The first was RPAC (Regional Pre-Apprentice Collaboration). The RPAC, established in 2016, is a "region-wide network connecting businesses, apprenticeship programs, government agencies, workforce development organizations, and educational institutions with the intention to strengthen preparing under-represented residents for successful construction careers." (RPAC Seattle, 2025). The second was the Women of Trades Facebook Group. This is a Facebook social media community with over 24,000 members. The group describes itself as, "a community of professional construction workers with something very special in common. We are all Women with a few vetted professional tradesmen like tool reps, tool owners and a few teachers that are part of the group to help show their female students the many different trades and encourage them to join our group." (Facebook Page, 2025).

Once interested educators responded, I coordinated with them to answer questions and schedule interview times. I asked participants why they were interested and what trade they were in to ensure they were genuinely interested and likely to meet criteria. Some participants came to me from within my own circles, so I knew them or knew of them, and I told them a little bit about my work. Once I decided candidates were a good fit, I began the scheduling process. In accordance with the University of Washington's International Review Board (IRB), I briefly explained to participants at the start of each discussion the purpose and scope of the research. I then obtained verbal consent from each participant to record and use statements in my dissertation. Each individual interview took about one hour and the focus group took roughly two hours. A $20 gift card to accessible food or beverage vendors was provided at the expense of the researcher to each participant after interviews were completed.

***Sample Interview Protocol***

To prepare for interviews, I formed a set of questions using the Appreciative Inquiry framework. Appreciative Inquiry offers an alternative to deficit-based research methods, providing a lens that focuses on strengths and affirmations of folks participating in research-based community building (Chilisa, 2020, p. 283). I chose this framework because the topic of sexism in construction is heavy and daunting. Much of the research around those directly impacted focuses on negative experiences like discrimination and harassment. Appreciative Inquiry, instead, led me to ask questions that invited participants to think about what they like about their work, what unique perspectives they have to offer, and how they can and are making the construction industry better for themselves and others. Appreciative Inquiry divides strength and asset-based questions into 4 phases: Discovery, Dreaming, Design and Destiny (Chilisa, 2020, p. 283). To get answers to the broader research question, **"**How are women and non-binary people teaching in PA programs addressing sexism in the construction industry?"**,** aligning with the intent of each of these stages, I crafted and applied the following questions:

Discovery questions invite participants to share positive memories, accomplishments and knowledge of, in this case, their work in the construction industry (Chilisa, 2020, p. 283).

1. Why did you begin teaching in the industry you are in?
2. What kind of connections are you forming with women and non-binary people in the program you teach in, including other instructors and non-teaching colleagues?
3. What are ways that you have seen sexism successfully challenged in your training program or others like it?
4. What have you done to make things better for women and non-binary people entering careers in construction?

Dreaming questions draw a clear vision of what an ideal future for a community would look like, according to members of that community (Chilisa, 2020, p. 283).

5. What do you wish other instructors teaching within your industry would start or continue doing in similar training programs?
6. What would possible impacts on students be if all instructors were to take more measures to push against sexism in construction? Which trainees would be impacted most and how would things be different for them?

Design questions help participants form strategies to bring the dreams they have for their community to reality (Chilisa, 2020, p. 283).

7. What can keep you and your colleagues in trades motivated to bring about changes we've talked about?
8. What are some things that would need to change to make the industry what you wish it would be?

Destiny questions help participants identify what actions they can take to implement the strategies they came up with in the design stage (Chilisa, 2020, p. 283).

9. What actions need to be taken to create those changes?

***Interview and Focus Group Process***

Inspired by Lorde, I came into this research reminded of the need for community to reach liberation. Though there are spaces for women and non-binary people in construction to come together and create community, like the Women in Trades conference I attended, as an instructor, I have not had much opportunity to do so specifically with those of us teaching within our trades. The absence of such space adds to the sense of loneliness or more, aloneness, in my work. In my daily work, I am mostly with men. I do not attend that many Women in Trades events, because they are not as relevant to me, as they speak mostly to those working on job sites, rather than teaching. Coming into this research, I knew it was

possible that others also felt the same and may benefit from a focus group, rather than individual interviews, because they could provide a sense of community, we, as women and non-binary trades instructors, may not get often. I predicted that participants may feel more comfortable in space for this reason and discussions might start more quickly and grow more detailed and robust.

For these reasons, because I diverted from the original plan of only conducting focus groups and, instead began with personal interviews, during personal interviews, I felt a need to make up for the sense of community that a focus group would have offered that one-on-one interviews did not. To fulfill this deficit, I felt myself wanting to show connection with participants while also encouraging them to speak openly. In my reflexivity journal, I asked myself, "is it interference if I share my own thoughts or experiences? Or will I just be creating a sense of community in hope the participants will feel less alone?" Ultimately, I decided both were true and chose to address the challenge by oscillating between objective observer and active participant. When setting up meeting times with participants, I did refer to discussions as "discussions" rather than "interviews," so I felt it natural to maintain a two-way discussion and focused on timing and intention as being supportive rather than turning discussions to my own need to express my experiences and feelings.

When planning to conduct interviews exclusively in the focus group format, I had concerns around some participants sharing more than others. The concept of valuing equal sharing counters the competitive nature of discussions common within western educational and professional spaces. Though discourse can lead to a more accurate picture of what is happening in trades classrooms, competitive energy in discussion can distract from the discussion itself, especially when some participants are sharing a lot while others are sharing very little or not at all. Additionally, brown explains the dangers that the need to compete in discussion poses against collaboration explaining, "We need to move from competitive ideation, trying to push our individual ideals, to collective ideation, collaborative ideation" (brown, 2017, p. 59). In reality, I did not take any additional measures to prevent over or under sharing,

and all participants in the focus group shared robustly. I simply asked, “who would like to speak next”, and participants each took turns speaking and answering questions until everyone shared each question.

When processing ideas and opinions that differed from my own, I pulled from Wheatley’s (1998) explanation that communities that focus on conformity, rather than everyone's unique value, energy shifts towards controlling one another mentioned on pg. 31 of this dissertation. When speaking with one specific participant, for example, she expressed that she did not believe that, currently, construction, at least the part she works and teaches within, was sexist. I believe she is wrong, but, keeping Wheatley’s words in mind, I internally acknowledged my own judgement and continued to listen, as her ideas come from her lived experience and, pushing participants to adapt to my ideas or shutting down ideas that do not align with mine felt like Wheatley’s idea of conformity. I utilized my reflexivity journal to express responses of opposition so I would not telegraph my thoughts in a way that might cause isolation or splintering through my research processes. Ultimately, Krysta did go on to talk about incidents of sexism she faced in her work, though she did not call it that. Earlier in this dissertation, I outline Krysta’s statements on subtle sexist comments made by colleagues.

**Data Analysis**

For all the interviews, including those done in Zoom and in person, I recorded with transcription through Zoom. Additionally, I recorded for transcription only in Microsoft Word, to ensure I would have a back-up transcription of data, should there be any issues with the Zoom transcription. Additionally, I took notes on physical reactions, body language and tone in discussions when I felt it was notable, to help capture the sentiments of discussions. After interviews were transcribed, I read through each transcription, checking for errors, comparing the transcription and notes with the recording to ensure voice was appropriately captured. While editing transcriptions, I changed sentences from spoken format to written format, removing filler words such as “like”, and adding punctuation when needed.

To analyze responses, I used open coding, identifying common themes, patterns and concepts in participant responses to tell a meaningful story (Chilisa, 2020).Deductive coding, often referred to as a

start list, is a process of creating a framework made up of possible themes to begin organizing data within (Azungah, 2018). I planned to begin by creating themes inspired by Keating's (2005) model of feminist consciousness building, sorting any responses that fit into those three themes. This was intended as an effort to create an analysis that challenges the dominance of colonial values and centering of White experiences from research (Azungah, 2018). However, once the interviews were complete and answers collected, there were so many repetitive concepts and phrases coming up that it seemed more authentic to code using themes that were already showing up organically.

An inductive approach to data created themes pulled directly from raw data collected from research (Azungah, 2018). To ensure I caught as much relevant data as possible, I applied an inductive approach by looking at remaining, uncategorized discussions and statements to identify other common themes and patterns that can be named. Additionally, sub-themes started to show that fit well with one of these categories, and I added them within narrative descriptions of each title category under the larger theme, allowing for more nuance within the themes.

I used what Chilisa (2020) calls a reflexivity journal throughout the qualitative research process. Chilisa explains that because "the researcher is the main data collection instrument" and analyzes, interprets, and reports findings, it is important "that the researcher's thoughts, feelings, concerns, problems and ideas are recorded throughout the process" (Chilisa, 2020, pp. 215-216). During interviews, I kept notes to monitor my own internal responses to discussions generated, to give myself an outlet for those thoughts and prevent myself from unintentionally imposing my own thoughts or ideas on those participating in focus groups.

When I felt particularly pulled away from interviewee words, I jotted my thoughts down so I could refocus. This happened when I had an opinion on what they were saying, for example, when I felt judgemental of a statement made or if I felt it related so deeply to something, I trailed off thinking about my own experiences. When I was listening to the interviews again, and looking over transcriptions, I found myself with a deeper response to what participants were saying, feeling more sad or happy when

listening and reading transcriptions than I remember feeling during interviews. I take that as an indicator that I was engaging in objectivity and focusing on capturing stories and experiences while conducting interviews. Double checking transcriptions and sorting data became a time of emotional and logical processing, which made it more difficult and exhausting than I had anticipated. I allowed these feelings to play out, reminding myself that I am a human and do not have to be a robot just because I am a researcher.

Chilisa suggests using a dense description of methods as a way of establishing trustworthiness in research (Chila, 2020). This method can be seen in the narrative summaries of how each theme showed up in interviews. Chilisa explains that sampling data alone lacks the context needed for readers to determine what other settings the findings might apply to. In-depth descriptions of participant backgrounds and contexts of discussions allow for information collected to be more believably applied to more diverse circumstances (Chilsa, 2020).

Chilisa states that member-checking is the "most important criterion for establishing credibility" (Chilisa, 2020, p. 214). She describes member checking as verifying that research participants consider themes and patterns the researcher identifies as connected to their words. She explains that the process can vary in formality levels. In this research, the member checking method used was to send an email to each participant that included the participant bios used and edited versions of all the quotes taken from each discussion. I invited participants to make editing suggestions and/ or redaction requests. For the most part, participants either confirmed that they approved of the information sent or made minor edit requests. Two participants did not respond to the member-checking emails.

I viewed these data collection processes as either necessary or as adding depth, dependability, applicability and identity to this research. They were processes taken from the guidance of researchers representing a diverse spectrum of ideas, thoughts and values around research. Additionally, these methods and practices were meant to tell a story. They provided ways for me to expand beyond my own

experiences and perspectives and tell a bigger story of what trades education looks like from the lens of women and non-binary people teaching within the construction industry.

## Findings

### Participant Introduction

Here is a brief introduction of the 10 women and non-binary trades educators I spoke with in personal interviews and one focus group. Below is a table including each participant's pseudonym and their job title. I then provide a brief bio on each participant. Following the bios is a breakdown of themes found and narrative examples for each theme.

| Quick Reference Participant Descriptions<br>*All names are pseudonyms I created, with the permission of participants. | |
|---|---|
| Pseudonym and Pronoun | Job Title |
| Brenda-she/her | Welding Instructor |
| Julene - she/her | Construction Management Instructor |
| Spencer - she/they | Welding Instructor |
| Krysta - she/her | Heavy Equipment Operation Instructor and Operator |
| Megan - she/her | Forestry Instructor |
| Shonda - she/her | Millwright program director and instructor |
| Kyla - she/her | Iron worker and lead instructor, coordinator and founder of a union-partnered construction pre-apprentice program within women's prison systems |

| | |
|---|---|
| Amber - she/her | Construction Project Manager and Carpentry Instructor |
| Piya - she/her | Electrician, union rep, education coordinator and women's council liaison |
| Roberta - she/her | Mechatronics Instructor |

Brenda is an instructor in a welding training program. Within her teaching position, Brenda had previously spent years running a grant-funded program geared towards including women and non-binary people in trades programming at the community college where she teaches. She spoke to the sense of defeat that came from years of managing support focused on women and non-binary workers in construction with little support or hope for change. In both our interview and in the focus group, Brenda seemed to move between tones of hopefulness and expressions of exhaustion and isolation.

Julene is a journey level carpenter who recently left a union position in a major mid-western city after her union local cancelled the Sisters in the Brotherhood chapter she organized, citing Trump executive orders banning gender-specific groups as the reason. She explained that, feeling exhausted and isolated after the change, she responded by moving to a smaller city to teach in a construction training program. This raw and authentic personal interview discussion illustrated the pain, betrayal and sense of defeat working on supporting women within commercial construction can cause. She also expressed the restored hope, potential impact, and sense of belonging that her new job in instruction offered.

Spencer is a non-binary welding instructor and uses she/they pronouns. They teach in a community college in the Pacific Northwest. They spoke to the importance and impact of male allies in trades education, both as an instructor and a former student, noting the lasting messages they received by one particularly memorable instructor. Spencer consistently shared sentiments of hope, inspiration and progress while also acknowledging the difficulties of working and teaching in an industry that is so

dramatically male-dominated. Unfortunately, I experienced an internet difficulty during our one-on-one interview and missed much of what Spencer said during the first half of that interview but was able to get a robust range of contribution and voice during the second half of our interview and throughout the focus group.

Krysta is a heavy equipment operator that works in the field in the summer and earns extra income from teaching in a training program in winter months. Krysta spoke to the belief that focus when hiring and training workers should be on identifying and building skills, not on gender. She expressed the challenge in maintaining and building meaningful relationships with women in her program while balancing her other work/life responsibilities. She drew attention to her observation that women (she did not mention non-binary people) need community to be successful in the field but creating that community requires additional labor and energy.

Megan is a lead instructor in a forestry program that dramatically increased the percentage of women during her time in the program. I included her in this research because forestry, especially the sector of lumber procurement, is a vital part of the construction industry. In both the interview and focus group discussions, Megan touched on the impact of male allies both in training programs and on the fields and the challenges logistical pieces like bathrooms play in training programs that require a lot of field experience.

Shonda is a journey level millwright who started her own business cleaning, organizing and setting up machining shops and factory spaces which lead to her developing and running a multi-trade PA program for women and non-binary people. She participated in a one-on-one interview. This discussion touched on the freedom and autonomy that comes with overseeing your own training program, the intertwining connection between race and gender and the value in trades instructors providing authenticity, transparency and showing up to the shops and classrooms as their true selves.

Kyla is a journey level iron worker, lead instructor, and the coordinator and founder of a construction PA program that operates within women's prison systems and partners with unions across her state. This exchange highlights the unique value of careers in construction, the importance of trust building to cultivate community within programs, prioritizing quality instruction, confidence building, the treatment of learners as equals, and creating pathways to fruitful careers for adults and non-binary people in state and federal custody. This interview was done through email correspondence.

Amber is a commercial project manager who recently taught in the carpentry PA training program she previously attended. This one-on-one interview captured discussions around differential treatment on jobsites and equitable teaching practices. Amber spoke to ways trades instructors can give women and non-binary students the skills they need to be successful.

Piya is a **s**econd-generation tradeswoman, after her mother. Though she is a union representative int the International Brotherhood of Electrical Workers (IBEW), she takes on an educator role as Mentorship Coordinator and coordinates leadership trainings and acts as the liaison for her local's women's committee. She came into the focus group discussion immediately acknowledging that she saw herself as an outsider to the group saying, "I am not sure if I am supposed to be here, as I am not currently teaching in a PA program.". I explained to her and the other instructors that, when I met Piya, my original intention was to ask her to connect me to PA instructors. After thinking about it, I decided her viewpoint as a mentor would be a unique contributor to the discussions and sent her a direct invite to the focus group.

Roberta is an instructor in a Mechatronics training program that teaches industrial equipment maintenance and repair. She is in her second year of teaching. Before instruction, Roberta was working in the field of mechatronics maintenance, maintaining equipment. She currently teaches in the same program that she graduated from.

**Overview of Focus Group discussion**

The focus group included Spencer and Megan, who had already completed one-on-one interviews and Brenda, who completed her one-on-one interview with me the day after the focus group. Megan did, however, need to leave about halfway through the scheduled focus group time. Piya and Roberta participated only in the focus group.

During the focus group, my strategy to garner engagement from the educators was to do my best to create space for participants to cultivate engagement among each other. Discussions started with a slow roll in, they gradually began picking up, retreating, and picking back up again—in waves. Participants started by answering the questions, directly, in isolation from what others were saying and gradually moved into interacting with and responding to each other. There were a few specific participants who made a noticeable effort to speak to what others had said, and, from there, it became part of the flow of the discussion. Spencer, for example, started several responses by acknowledging the admiration and inspiration brought on by specific things others had said. Towards the end, instead of each person answering each question, robust discussions stemmed from one person's answer.

**Themes**

To interpret how this data answers my research question: How are women and non-binary people teaching in PA programs addressing sexism in the construction industry?, I turn to two overarching theme categories. The two themes found were; **"**observations, impacts and outcomes of sexism in classrooms and on jobsites" and **"**ways to address, mitigate and heal from impacts of sexism in construction". These themes and respective sub-themes are outlined in the table below.

| Themes and Sub-themes | |
|---|---|
| Theme | Sub-themes |
| Observations, Impacts and Outcomes of Sexism in Classrooms and on Jobsites | Limitations of opportunities for women and non-binary people |
| | Experiences of a culture of sexism in the industry |
| | Impacts of the sexist culture of the industry on women and non-binary instructors |
| Ways to address, mitigate and heal from impacts of sexism in construction | Teaching methods, advocacy, and community building |
| | The role of male allies |
| | Creating support and access points for women and non-binary folks to connect with living wage opportunities |

***Observations, Impacts and Outcomes of Sexism in Classrooms and on Jobsites***

Responses coded under the first theme, **"**observations, impacts and outcomes of sexism in classrooms and on jobsites" describe what instructors are witnessing and experiencing both within training programs and across the industry and/or see women and non-binary trainees currently or potentially facing in the future. Responses fitting this theme were then coded into 3 identifiable sub-themes of perspectives that tell a story of what sexism in the construction industry looks like, how women and non-binary workers are directly impacted by it, and how these impacts influence women and non-binary trades instructors in their work as educators. Subthemes included, "limitations of opportunities for

women and non-binary people", "experiences of a culture of sexism in the industry", and "impacts of sexist culture of the industry on women and non-binary instructors."

**Limitations of opportunities for women and non-binary people.** In discussions that touched on experiences of deficits and limitations faced by women and non-binary people teaching, learning and working in the construction industry, consistencies were demonstrated in a few types of encounters. Four participants, for example, noted experiences pertaining to inequitable learning opportunities and 6 mentioned limited jobs, working hours and promotion opportunities, and being limited to specific tasks or roles such as clean-up tasks or administrative roles. There were several discussion points that demonstrated how these concepts appear in the work of women and non-binary people teaching in construction trades.

Participants shared experiences that exposed the many barriers sexist policies and practices imposed throughout the span of their professional experiences, beginning with acquiring the skills and knowledge needed to do their jobs. For example, when speaking to learning opportunities, Julene explained a common barrier she sees that inspired her to move into teaching sharing that, "Journeymen don't ever want to teach, and they definitely don't want to teach a female, because they're afraid of the liability, they're afraid of saying something wrong." Julene made the point that, for trades jobs to become equitable, women and non-binary students would have to have as much access to learning experiences as men do. This point was also made by Brenda, when she spoke to the frustration of needing to advocate for herself, even as an instructor, as she is often not invited to the same skills training opportunities as her male colleagues.

Participants also consistently shared experiences demonstrating limits to job opportunities. Megan illustrated this when explaining why she began teaching in forestry saying, "I was feeling pigeonholed towards a job (doing) book work and text readings and scientific readings. I went for this job because of the ability to kind of bring out that more rough and tumble side of myself in a way that was acceptable professionally". Amber shared a similar experience saying, "When I started working in the

trades, I started working in the administrative side after completing the apprenticeship program here. I didn't want my vocational skills to just go unused and get rusty. I was watching everybody do the things I learned to do. But I wasn't actually using those skills myself." When describing the impact of the siloing she saw of women, particularly, into administrative and desk jobs, Piya expressed the isolation she felt as a woman who worked at a jobsite, especially while attending a national trades women conference. She elaborated that, "it just didn't feel like there was a lot of support for field women in the women in construction space". When working on job placement with students, Megan said that she found that more non-binary students are landing and keeping jobs in the field. Participants consistently described how, in the construction trades, women, specifically, are expected to play a specific role, most commonly being led to desk jobs and administrative roles while men, and in some cases, non-binary workers, are in the field and on the jobsites, with tools in hand.

**Experiences of a Culture of Sexism in the Industry.** A notable commonality in discussions was the sharing of stories and insights that painted a picture of what sexist actions are taking place in the construction industry, from the perspectives of trades instructors and mentors. Types of sexism described included the act of tokenization, hiring women and non-binary people to meet a specific expectation or requirement, subtle acts of sexism in trades training programs by instructors and students, and social isolation. Such encounters included the expressed or implied intention to fulfill a quota or contract obligation, or insinuation that a person was hired out of obligation rather than skill.

For example, early in our interview, Brenda indicated that, after being hired in her current position, her colleagues expressed their resentment around her being given the position. She explained, "I'm sure that they thought I was a token hire.  I'm sure that there are people that still assume that that's the only reason I'm here." She later stated that those she suspected assumed she was a "token hire" were some of her older male colleagues, most of whom have since retired.

When speaking about women being represented in her trade, Roberta shared that she received unexpected praise and attention while in the field explaining, "maybe I was naive about it, but I was very

confused as to why they always wanted to interview me and hear my story when it's the same as everyone else's". She added, "But the difference was not everyone else was a younger woman in industry who looked liked me and was successful in the field. So, I think at that point, after doing a couple of those, I was like, 'man, maybe I really am just an anomaly and so that's why everyone just keeps wanting to hear my story.'"

Julene spoke to both tokenism and the lack of women and non-binary people represented in leadership roles in her work before she left the union to teach, sharing that her union had one female vice president. She also shared that there were no women or non-binary people in the higher paying positions within that union. Julene warned that, though the vice president may be okay with making less than other leaders, because she is guaranteed forty hours a week of work, she may not otherwise get, it sets other women up for failure. She went on to say, "as soon as a woman gets past the apprenticeship and into commercial (construction), at least in the union, they stop making their hours. They don't collect the benefits, or the insurance." She went on to specify, "they don't get vested into the pension. So, what happens is, the union hires them, fills that quota, and then terminates them before they hit journeyman, or before they get vested into the pension." The phenomenon of women and non-binary workers being hired to fill a quota and intentionally let go before accruing benefits connects back to the concerns for women in her program Julene shared previously.

Early in our interview, Amber talked about having difficulty forming connections in her work. She admitted, "I find it difficult to form connections in the industry in general; teaching or working in trades." She cited a sense of isolation in both spaces elaborating, "As a teacher, I've seen that same level of disregard from students, especially some of the students who have experience in the field". Though she may feel isolated, Amber expressed that she did feel like she was taken seriously as a teacher and backed up by colleagues saying, "We do have a good group of instructors and faculty that will help

reinforce what an instructor says for their course and reinforce how knowledgeable we are that we're in our positions for a reason."

Brenda echoed this sentiment of isolation describing it in the form of being left alone to do work centering around women and non-binary students saying, "I feel like I've been working alone to change things." Even when she was running a grant funded program for women and non-binary students Brenda explained, "I was just doing it all on my own. I felt like I was just pushing it forward. And the institution loved the optics but lacked the follow through and actually having my back with anything." Brenda also talked to a sense of isolation when speaking to being seen as an equal by colleagues saying, "It's taken like 10 years working with this colleague who was my teacher to finally feel like he has confidence in me and my technical knowledge and skills. It's just been something I've constantly been fighting and feeling."

Brenda's story of self-doubt around her colleague is demonstrative of some of the subtlety illustrated in the stories of interviewees. Megan spoke to the impact of subtle acts of sexism, and the importance of addressing them within college training programs. Megan elaborates, "A lot of subtle comments are being made in a classroom that I do worry about." She recommends that, "we need to address how detrimental body language and comments can be when you're already feeling very out of place and that you don't have a community."

Though Krysta expressed that she puts in extra effort to support women training in her program, she admitted to having mixed feelings about the term *sexism* in construction. She adds,"I struggle with sexism a little bit. I don't feel that sexism is as big of a thing. Yes, there is sexual harassment out there. But I don't feel that the two are the same." She stated that she believes sexism used to be a problem in her field but no longer is. She explained, "it's not that women are looked down on or thought differently of. There's just not that many of them". She went on saying, "20 years ago, oh yes, so much so, but it's different now. I feel that all the women that come in are very much treated equally now". Later, when

asked what instructors could do differently, Krysta admitted that she wished, “they understood how hard it is for us.” She went on to say that sometimes her male colleagues make comments she indicated were dismissive of the work and effort she and other women around her put in to be there. Though she may not use the term sexism to describe what she experienced in her work, the dismissiveness from her colleagues she described is an example of the type of sexism that repeats itself over time, causing harm to those impacted by it.

**Impacts of the sexist culture of the industry on women and non-binary instructors.** There were many moments when instructors and mentors spoke to the pain, wear and tear, and general impact of consistent sexism in their own work. Exhaustion was consistently cited as an outcome of various forms of sexism. Self-doubt, isolation and fear for the future women and non-binary students faced in their careers were all named as contributors to exhaustion. Additionally, instructors reported the mounting responsibilities they faced, as additional tasks like organization, emotional labor, and recruiting and supporting women and non-binary students were either directly given to them or given by default, as their male colleagues were not doing them. These tasks, whether intentionally given or left as an unspoken expectation, exacerbated the already existing exhaustion several instructors experienced.

Julene gave an example of the type of self-doubt that becomes exhausting over time. She expressed a sense of self doubt so relatable in my own experience that I felt myself wanting to reassure her that what she was saying was real and valuable. She had recently made the switch from industry to instruction and seemed unsure of some of her answers, asking me, “am I allowed to ask how others you have interviewed are answering these questions”? It was around this time that I jotted in my reflexivity journal, “I really relate. I never knew if I was being silly or not”. What I meant was that what she said made me think of times I doubted myself and feared my colleagues thought I was overreacting when I addressed points of sexism and how they impacted students and myself. I responded by giving some general areas other participants mentioned and repeated things that Julene had said earlier in the discussion that answered the question. This is when she said, “Thank you. That really just validated my

feelings". I felt proud that I had created the sense of community I felt may not be possible in a one-on-one interview.

Brenda spoke, on several occasions, to the weight self-doubt carried on her workload, indicating that she often felt her colleagues and students second guessed her and that, in the end, she became too tired to care. Amber spoke to the self-doubt she felt when she suspected students were questioning her field knowledge. Having colleagues that backed her up when students questioned her knowledge or instructions, she said, helped restore her confidence. Shonda spoke of how she intentionally evaded the burden of self-doubt, simply explaining that she did not have time or energy to doubt herself in her work. She credited this frame of mind as an effective way to model self-confidence for students.

Spencer and Shonda, who both mentioned the benefits of working in an in-demand trade, indicated that, rather than work in an environment where they were often doubting themselves, they both had the privilege of being able to quit before things got bad, as jobs were always readily available to them. Spencer also spoke to the power of mentors that believed in her as protection against self-doubt. As a researcher, I wondered if Shonda and Spencer both seemed to have more energy than other participants who consistently expressed genuine exhaustion, like Brenda, for example, because they weren't bogged down by the exhaustion self-doubt creates.

Though several discussions came up linking self-doubt to exhaustion, one discussion directly connected exhaustion to the isolation caused by navigating a sexist industry as a woman teaching within it. This focus group topic sparked a dynamic that, as a researcher, I found was interesting to observe. There was a seemingly indirect discussion between the two welding instructors; Brenda and Spencer. Brenda consistently expressed sentiments of exhaustion, isolation, and defeat while Spencer held a steadily positive perspective. These two perspectives engaged with each other a few times, and towards the end, I began to wonder how much intention was behind the interchange, particularly on the part of Spencer.

One example of this interaction occurred when Branda explained what kept her motivated in her work. Brenda began by describing the contradicting feelings of togetherness and isolation that happened when she was in groups of women and non-binary people in trades, including the focus group. She explained, “here we are, colleagues, in a sense. Because we're all teaching these non-traditional students. Swimming upstream, but we're in our own little silos and then we're seeking this institutional support from where we work.” She went on, “It's tough because I feel like I have gotten so burnt out because I feel like I've been working alone to change things. The institution loved the optics but just lacked the follow through and actually having my back with anything. And the only camaraderie and sisterhood that I felt was in these sorts of spaces.” She explained that though she feels alone, knowing others are doing the work saying, “you start to see the same women again and again that are all doing this work. But we're all exhausted because we're all doing it on our own, like together, but on our own.”

Seemingly in direct response, Spencer came in with a pointed, welding specific recommendation, noting **“**I think something that put the wind back in my sails a little bit recently is a book called Thick Skin by Hilary Peach (2022). It's about one of the first women Boilermakers and it's done from her perspective.” Spencer explained that their college administrators gave her the book, so she read it. They responded to the book saying, “I was really moved by her experiences and it really showed me how far we've come in these strides to make the spaces much more...I mean, they're not perfect and they never will be, but so much more welcoming to women in the field.”

Brenda responded directly back saying that she had not read the book yet but planned to. The sentiments Brenda expressed were hard to hear, and it was difficult for me not to reach out and comfort her. I hoped that another participant might step up to do so. Though Spencer did not directly comfort Brenda, I felt like this exchange was Spencer’s way of offering comfort and support, given the setting and circumstances. I think it is important to mention that I have no idea if these two people have ever met outside of the focus group. It is possible they have, and that a relationship, be it helpful or harmful, had already existed between them.

Julene also expressed sentiments of exhaustion coupled with isolation like those Brenda spoke to throughout discussions. In one discussion, Julene offered a candid description demonstrating how inequitable gender dynamics in her industry experience impacted her work as an instructor. She confided that she is worried about how her students, especially her female students, might be treated should they choose to join the union. "There was Amber Czech" she explained "who recently got killed (on the jobsite)." She then went on to describe a discussion she had with a student when she encouraged her saying, "yeah, I want you to be in commercial (construction). You'll make so much money". "But I started to almost tear up" she explained saying, "I told her about Amber Czech, and I was like, 'but you know, you gotta be really careful, and I want to be honest with you. It's not easy. You'll be, the first to get cut.'"

Explaining the personal impact of her experiences in commercial construction, Julene said, "I consider myself a very successful carpenter, and…I'm very rich because of it. But I feel like I paid a price in… I lost a lot of who I was." She went back to talking about the student she spoke with, adding, "I mean, this student, especially. She's a better carpenter than I am, than I'll probably ever be." She went on to the supposition, "And she's gonna miss out because she's not given a chance. And it just…It pisses me off." Julene explained more of the exhaustion she carries saying, "I think about when I was in my 20s, and how strong I was, and everything, and now I'm just… I'm getting it back. I didn't realize how much I lost." Though she indicates that her current work as an instructor is mostly positive, Julene still appears to carry the exhaustion caused by her experience in commercial construction and the weight of knowing the harm her students potentially face in their future careers.

Krysta spoke to the conflict between the benefits she saw from cultivating meaningful mentorship relationships with women in her training program and lacking the energy to maintain them while also working full-time and caring for her family. She said that building connections with women in her training program is great but added that "Sometimes it's hard because you know, I'm also going through my own stuff, and I am working a lot of hours and. There aren't very many of us (women instructors)."

She elaborated, “when I'm working 70 hour weeks in the summer, I don't have time sometimes. I don't know how to explain it. It's super satisfying but takes a lot of time away.” Krysta spoke to both the limits presented by the additional task of building supportive relationships with women in her program and the satisfaction and, perhaps, healing power these efforts provide. Though many of the stories told in interviews and the focus group were accounts of the harm caused by working in construction, participants also told experiences and ideas of hope for a better industry for women and non-binary trades students.

***Ways to Address, Mitigate and Heal from Impacts of Sexism in Construction***

The second theme area, **“**ways to address, mitigate and heal from impacts of sexism in construction”, features testaments of what is being, can be or should be done, according to interviewees, to change the elements of sexism in construction described in the first theme area. The second theme included 3 sub-themes. The first is “teaching methods, advocacy, and community building”. The second sub-theme is “the role of male allies”, and third is “creating support and access points for women and non-binary folks to connect with living wage opportunities”. These interview excerpts paint a picture of action, motivation and hope for change. They offer guidance to those currently teaching in trades that hope to change it.

**Teaching methods.** When looking at the potential trades educators have to create changes in the construction industry, the idea of implementing intentional teaching practices was one consistent suggestion that came up. Several participants shared teaching practices that they deemed as effective ways to mitigate harm caused by, heal from and address sexism within the construction industry. This sub-theme highlights statements valuing authenticity in teaching, skills-centered practices and the importance of confidence building work.

Megan shared insight on the power of authenticity and connection from trades instructors. When asked what she wished other instructors would to in her program or others like it, Megan stated, **“**I wish other instructors would be a little bit better about seeing that it's not breaking down a professional barrier, being more personal or personable to students to reduce the wall between professor and student in a way

that would allow students to ask for help or talk." This resonated with points Spencer and Shonda made that stressed the importance of instructors modeling an environment of authenticity to encourage trust and comfort from students, especially for women and non-binary students.

Shonda also spoke to the power of authenticity and cultivating student-teacher connections. When illustrating how she built up connections and created community within her program Shonda explained, "I really push authenticity and the importance of speaking up and creating space for yourself." She also shared, "I teach students different tips and tricks that I use to fit into a group and the importance of getting to know yourself so that when people say things to you, you don't take things personally". Once confidence is built, Shonda explained, "you're able to read the crew that you're in. If you love yourself enough, you can know which job is toxic for you and which one is good for you." She then stressed the importance for women and non-binary workers to have the strength and courage to find new opportunities and leave jobs when they are not working. "Even if you've been in place for five years and it's secure income, if you're missing your family and your family's falling apart and you hate your job and they're never gonna move you up, you gotta have the strength (to quit)."

During the focus group, Spencer spoke with the group how they create community among students and colleagues sharing, "I model being in that space and being open about yourself. I find that students feel comfortable building those communities and connections by being open when I am modeling that. Building those friendships." Spencer went on to offer specific approaches explaining, "one thing we do in my program is we remind everyone that when we walk through the door, we are all welders." She added, "We try and build that community with our students of looking out for each other ". Spencer described how they see the impact of this approach, sharing that students will offer each other support regularly like, for example, if one student's care won't work, other students will go pick them up and bring them to class.

The importance of focusing on a student's skill level, rather than their gender was mentioned in nearly all of the discussions. When speaking on how she supported women and non-binary trainees, Amber echoed sentiments expressed by several others; that she focuses on student skills rather than gender saying, "I think we do a good job in this program of making sure that everybody feels that each task has to be completed and performed by each person". Additionally, she voiced concern that women and non-binary students may come into the industry expecting to be treated differently or asked to do different tasks. To address this concern, she said that in her program, "we set them up with expectations to be treated the same. Which is critical. Once you get to the job site, having an expectation to be treated differently creates an environment that's going to set you up for failure". I interpreted Amber's statements to mean that, to Amber, focusing on skills rather than gender also meant teaching women and non-binary students that they need to learn skills and would not be hired and kept on staff simply because of their gender.

Answering a question about connections she was forming with women and non-binary learners, Kyla replied that she holds women and non-binary trainees in her program "to the same standards as everyone else, and I back them up." She elaborated, "It's not about treating anyone differently, it's about making sure everyone has what they need to succeed and knows they're capable." She later added that to support them, she focuses, "on setting clear expectations and making sure everyone is getting real hands-on experience." She does her best, she explains, to ensure that, "nobody gets pushed to the side. Everyone learns the tools; everyone does the work." She stresses this to industry partners as well, assuring them that, "our graduates, women included, are prepared and should be treated as such. It's about making sure they walk out of the program confident and ready". Though Kyla also references differential treatment based on gender, as Amber did, it seems her concerns and prevention practices are geared towards employers, and not program trainees.

Megan spoke to skills-based teaching techniques her and her colleagues use to address gender disparages they recognize within the program. She gave the example that she and her colleagues noticed that “the men tend to gravitate towards the power tools, and the women are often, even if they're very engaged and want to try, kind of pushed aside initially, if not indefinitely”. To address this, she described how she and her colleagues created an “anonymous survey of skill sets”, explaining that, “we're finding that a lot of our non-male students are very skilled in some of these things. And it's a neat way to present it to the class as a skill set and not a personal trait that might be associated with gender or identity”.

In this example, Megan spoke of confidence building as a goal for teaching women and non-binary students in the trades. Several others interviewed also mentioned how they build confidence in their programs and the role they see confidence playing in their instruction. When asked, “If all instructors were to take more measures to push against sexism in construction, what do you think the impact might be on students? Roberta explained that “It would build a lot more confidence”. She continued, “especially for people who might already feel like they’re stepping into something unfamiliar. They wouldn’t be focused on proving they belong, they could focus on actually learning.” She added that she feels this is something done well in the program she teaches in.

When talking about the extra effort she puts into ensuring the success of women in her program (she did not speak to non-binary learners), Krysta identifies fear as a factor undermining confidence, saying that “One thing I run into a lot when you have women that come into the field, at least I notice with a lot of them, is that they're a little scared. Because they are large machines”. She continued, “Because they are large machines, they're a little scared. And I always just try tell them, ‘You have to learn how to be confident in yourself and stand up for yourself.’” She added in a quieter tone, “That's something I always really push with the girls. Because sometimes it does feel like their hearts get broken a little bit more if things don't go right.” In addition to speaking directly to trainees about the importance

of confidence, Krysta also said that she had trainees repeat tasks to allow them time to feel more comfortable with them.

In addition to direct communication and repetitive exercises, another tactic Krysta mentions in confidence building work is teaching students to prepare for things to go wrong rather than aim for perfection. She explains, “when you're young in the industry, it just is a fact of life. When you're learning, accidents happen. You blow tires, you, you do things wrong. It's part of learning”. Krysta recognized that when she sees trainees losing confidence, they tend not to “stick with it”. She added, “I want women to stick with it. I want more of us out there.” In framing it this way, Krysta demonstrates how instruction rooted in confidence building can be used as a retention method, keeping women (Krysta did not mention non-binary students) from dropping out of training programs or the excavation field, even after they complete the program.

Roberta highlighted the hopefulness that confidence building can bring. When sharing what motivates her when things feel difficult, Roberta says that seeing the results of her training program helps. She explains, “Watching people come in unsure and leave with direction, confidence, and a real opportunity, that’s what keeps you going. It’s also knowing that the way we run our program is setting a standard for what this industry can look like.” Roberta’s testament demonstrates how confidence building work does not just benefit students but can help bring program instructors and staff a sense of pride and motivation. She spoke about how the work she did together with her colleagues does not just positively impact the lives of the students in that program but can contribute to positive changes within the industry as a whole.

**Advocacy, community building, and the role of male allies**. Discussions and statements that I coded under this theme spoke to the role and value of male allies in the success of women and non-binary people both teaching and learning in construction trades training programs, and the potential allyships have in changing the culture of construction. This theme also included discussions around the benefit and

impact of building communities both in general and specifically among women and non-binary people throughout the industry.

The term allyship was used by participants throughout interviews as a vital part of trades programming for women and non-binary people. Many of the recommendations, stories and perspectives they shared included an idea of what allyship looks like to them. Brenda called attention to the possible variation of definitions of the word allyship and what that might mean in context in our interview. I followed up on a statement she had made about her current colleagues asking if she felt she had allies there. She replied, “They are just not getting in the way. And I don't know if I consider that allyship.” She continued, "they are just treating me like I deserve to be treated, and like I deserve to be there. That should just be the norm. Unfortunately, I think sometimes that's conflated with allyship because they're not interrupting us.” Brenda raises the point that many men teaching within construction trades may want to be an ally to their women and non-binary colleagues, but do not know what allyship looks like.

Shonda told a story that demonstrates one example of how allyship from men can look in trades education. When I asked how she began teaching in her field, Shonda answered that one of her clients said they had a grant to start a millwright training program for women and non-binary folks and offered her a job to start the program. “It initially started off as cleaning and organizing (machining) shops”, she detailed, “and in that space, I would hire pre apprentices”, who she said she trained in soft skills common in mill right, machining, and other trades work. One of her clients approached her to say “hey, I heard that you like helping people get into the trades and I'm doing this thing with Women Building Futures and they're looking for somebody to do the curriculum.” She described how enthusiastic she was to have an opportunity to try something new and challenging. Though the man who offered her the opportunity to start that training program may not have done it as a deliberate act of allyship, by opening the door for Shonda to continue the work she was doing in a more official capacity, he was offering support and opportunities in an industry that consistently blocks women from support and opportunities.

Another illustration of the impact male allies in trades instruction can have, particularly on the lives of the women and non-binary people they teach was given by Spencer when sharing what motivated her to weld. She shared, “I had a great support system from a male instructor of mine who constantly reminded me that women are generally better welders than men. He always made me feel welcome and always stood up for me if the guys were giving me a hard time.” This brought up a pattern I recognized both in the stories I heard and in my own work. Just one man in a trade reminding a student or non-binary person they belong here is often enough to give them the additional confidence they need to join or stay in a program or career.

Perhaps it was because of the questions I asked, but everyone I spoke with mentioned support they had or saw students receiving from men as contributors to retention, success, and/or entry into the field. Megan talked about how she, as a teacher, benefits from having her male colleagues back her up, especially when talking with industry partners. She also gave examples of how, in student work, male allies are vital in ensuring women and non-binary people in their class can safely use the bathroom in the woods and are safe, in general, when working in the field. Amber, Spencer and Brenda all talked about how the support male colleagues gave helped them feel more confident when standing up against students who questioned decisions they had made. Kyla, Piya and Roberta all mentioned the importance that men in partnering companies had in ensuring students find and retain gainful employment once graduating the program.

Most participants also cited communities of women and non-binary people, and making those connections, in general, as assets they saw in their work. When speaking to what she learned teaching, Shonda brought light to the opportunities for building and experiencing communities of women and non-binary people she had through the training program that she had never had before. She specified, “I've met some females in the millwright trade over the past 20 years, but it's very male dominated. This is probably where I would say I have met, in the past couple years, the most women and non-binary

workers, and the most diverse group for sure." She continued to describe a connection she made with the first apprentice she ever hired who was of the same mixed-race identity. She explained, "I'd never met another combo like me before" stating that she, herself, was also both Cree and Jamaican. Shonda also added that she often builds community with students of color within her program, explaining that sometimes, rather than speaking to the impacts of sexism in construction, they form bonds talking about what it is like to be in the industry as someone who is not white.

Krysta had a lot of experiences to share around building community, specifically with women (she did not speak to any experiences with non-binary students or colleagues). She explained that she has built several relationships out of mentorship, beginning when workers were students and growing, in some cases, into lasting friendships once students became her colleagues. When describing one such person she tells me, "She's become one of my best friends." She continued sharing that she reaches out to women in training and sometimes they reach out to her, and a mentorship relationship forms from there. "We help each other through everything", she added, "through job struggles, through family struggles, because there are a lot of family struggles within this industry because we work so many hours and have to travel". She says her work has created a lot of friendships. Krysta said that, though she saw these relationships in a mostly positive light, as mentioned above, she acknowledged that they did take a lot of energy and effort to maintain.

**Creating support and access points for women and non-binary folks to connect with living wage opportunities.** A third sub-theme that consistently came up within the theme covering ways women and non-binary people teaching in trades can address sexism within construction included statements and stories speaking to the creation of access points for women and non-binary people to connect to living ways jobs. Discussions falling into this sub-theme touched on the facilitation of career connection and exploration within and beyond their trade, the potential trades programs have to rebuild the culture of the construction industry, and changes instructors are seeing within their own programs.

When answering the question of why she teaches, Kyla began by explaining that she did not enter the iron workers union to teach. She clarified, “I got in it to make a living wage that I could support myself with”. She stressed the value and pride that comes with working in the trades and with other people, currently, with incarcerated adults. “It’s about creating a real pathway” she adds, “not just talking about it, but actually showing people how to get there”. Like Kyla, everyone I interviewed, at some point, in one way or another, acknowledged the value and potential jobs in construction trades offer and the importance of providing equitable access to those jobs.

In the focus group, when it was Piya’s turn to answer the question, “why did you begin teaching?”, we decided (since she was a mentor and not a classroom/lab teacher), she would instead speak to why she took a mentorship role in her union. Piya explained, “My mom was in the trades before me, and I frankly was a little surprised, especially coming into the union space, that there were so few women around and so little representation”. When she brought it up to her union, Piya explained that they simply said, “well, we’ve tried”. She went on to say, “I knew that these were jobs where folks could take care of their families and have the kind of upward mobility that a lot of jobs for women don't have”, adding that jobs women get that do have those things require a lot of education. “So,” she continued, “I just started doing it. I guess because my mom always told me to be the change you want to see and don't complain about a problem that you're not willing to do something about”.

Career exploration and career mobility also came up as a way to ensure women and non-binary students had longevity in their careers, even at times when their hours were cut or their jobs became difficult to stay in for other reasons previously mentioned as common for women and non-binary workers in construction. When speaking with the group about how to best support women and non-binary students in our programs, Piya suggested to instructors, “talk to them about the different types of careers that they can go into and jobs that they can go into from your training program”. She added that, “not everybody is

going to continue that job in the field. They'll move into leadership. They'll move into inspecting. They'll move into teaching. They'll move into all the different office jobs, like estimating".

To prepare students for as many options as possible, Piya recommended we, “Get them thinking about getting credentials throughout their career to be lifelong learners and advancing through their careers”. This sparked a robust discussion around the importance of supporting students to keep career options open. Both Brenda and Spencer shared that, as welding instructors, they modeled this behavior by taking advantage of training in new skill areas and sharing that with students. Roberta chimed in as well to share how she encouraged students to learn about the wide variety and various companies offering jobs within mechatronics.

When talking about connection to opportunities, the role of partnering contractors, unions and hiring companies came up as both a pathway to employment connections came up in in a discussion about how to better support graduates in entering the workforce, which I am not impartial towards as this is something I have struggled with directly in my work. Offering a strategy, she found useful, Piya started a discourse around vetting potential employers and partnering contractors. She offered tips on how to hold them accountable for providing safe and equitable opportunities for women and non-binary workers when offering practices that support women and non-binary apprentices. When she checks in with contractors, clients and other union reps, Piya said, “I'm constantly asking, what are you doing to support women in your organization?” Roberta chimed in to share that as a graduate herself; she found it helpful when instructors sought out employers they thought would be a supportive work environment for and said she makes an effort to do the same for her graduating trainees. Spencer hopped in to share that they encourage graduates in the workforce to share their experiences. They added, “If I find out a company is saying one thing and doing another, I just don't send students to them anymore.”

When speaking to what motivates her, Roberta shared that she is motivated by the change she sees in the industry, starting with what she sees within the program she teaches in. “I saw it. I experienced it,” she said adding, “and if I keep working towards making those changes and keep pushing that agenda,

it'll just catch fire and spread. It won't just be one person or one event, or one company. It can be industry-wide or trades-wide." Describing changes she has seen within her own program, Roberta shared the change she has seen since becoming an instructor in the program, compared to what she experienced as the first woman student in the program. "When I was in the program" she detailed, "it was probably 80% um, white middle-aged men. And then maybe another 19% was, younger white guys. And then it was me (a young Black Woman)". Roberta went on to illustrate what her class looks like now, saying, "I have two mothers in my class. I have an expecting mother in my class. I have two non-binary students. I have another younger woman as well, just in my class alone". She considers this change a success and attributes it to outreach tactics and style combined with representation, speaking to the power of her own representation of someone who is successful in the field for students who do not identify with the status quo.

Roberta's story cultivated a discussion in the focus group about how we, as trades instructors, have a lot of power to change the industry because we are churning out its future leaders. Brenda seemed hopeful when she said, "That age demographic is changing. And I do think with that change, there's letting go of some toxic behavior. What was the status quo that no longer is". "People that were my students," she explained "are all over the industry now. Some students that I've taught are now in leadership positions; foreman or site leads at shops where my current students are going to get hired"

Inspired by what Brenda had shared, Roberta expressed that, as instructors, "we're basically pushing out a new way of thinking and behavior that will shape the future." She went on to say, "I feel like now students can just be more confident when it comes to going out into the career field and not feel as though that, because they're non-binary or a woman that they can't get the same job as their fellow classmates can." She clarified, **"**they're graduating with the same skills, and we are making sure to reinforce that mentality."

Some of these discussions acted as catalysts to a change of output and demeanor for some. For example, although Brenda expressed exhaustion and defeat earlier in the focus group, she countered it

with an energy of hopefulness that came out while talking about possibilities for positive change and our impact as instructors. Sharing what would need to happen for the sexist culture of the construction industry to see change, Brenda brought up changes she currently sees in her program and throughout the industry. She shared that, as one generation of contractors, superintendents, foremen, project managers and other leaders in the industry is aging out she is seeing a new generation replacing them. This discussion brought an uplifting energy and helped us to focus on our assets, as women and non-binary people teaching in construction. The expression of hopefulness offers a powerful contrast to stories and sentiments of exhaustion, isolation and loss of hope shared in early focus group and interview discussions.

Throughout the interviews and focus group, educators revealed incidents of sexism they faced both in the field and in their programs, and the depths and range of harm those experiences caused. They shared many ways that they were already making changes in their sectors of the construction industry and offered a roadmap for how these changes can be continued and amplified, noting other changes they saw a need for. The hopefulness that came forward in the end of the focus group was not just a positive ending to months of discussions with women and non-binary trades educators. It was a reminder that to make these changes, trades educators need the motivation hope brings to move forward. Community, acknowledgement of positive changes we have already seen, and a visibly clearing path to more changes in the future were all elements that consistently brought moments of light, motivation, and hope for a better future in construction for the women and non-binary workers we train.

## Analysis

After the interviews were conducted and transcribed, as I sorted through them, I thought of the words of the 10 educators I interviewed. I reflected on how those ideas related to or differed from my own experiences teaching in the trades. I began to see patterns, connections, realizations and ideas forming. Many experiences expressed directly by participants were also spoken to by thinkers and researchers who provided guidance in the Literature Review section. This allowed me to look at statements and ideas

consistently expressed in interviews through the lens of theories, concepts, data and knowledge that provided a background, inspiration and jumping off point for this research. In this analysis, I describe these patterns, connections, and standout takeaways.

## Trades Pedagogy

The need for trades instructors to apply intentional pedagogies and practices was mentioned consistently in interviews. Participants identified access to skills learning, soft skill instruction, instructor authenticity and teaching with the intention of changing the construction industry as methods they found to be effective in addressing sexism. These teaching practices connected directly to lessons outlined within the literature review. Authors, theorists and thinkers discussed in the literature offered frameworks, concepts, and evidence that supported and elaborated on teaching strategies spoken to by participants.

### *Access to Skills Learning*

One pedagogical concept that appeared in most interviews was the role gender played or should play in trades instruction. The idea that skills should be valued over gender and a person should be hired, taught, praised or valued based on the skills that they demonstrated and not their gender is a concept that consistently repeated itself, in many cases word for word, throughout the interviews and across participants. Krysta, Kyla and Amber were the first three participants I heard voice this concept framing it as “skills over gender”. Both Krysta and Kyla proudly stated that they evaluated, and taught students based on their skills, not their gender when teaching and Amber echoed the sentiment explaining the importance of ensuring that, “every student learns every skill”. Initially, I interpreted Krysta, Kyla and Amber’s statements as indirectly saying that they felt women were hired for their gender, and not for their skills.

Amber, who I interviewed first, openly stated that she thought some women believed that they should be treated differently than men and allowed to do less daunting or difficult labor. After Krysta said construction education and hiring should focus on skills rather than gender, she went on to say that she did not believe the construction industry was sexist. With the tone and context of these statements, I

inferred that it was possible participants did not agree with the topic of my research and were expressing disagreement to my stated belief that the culture of the construction industry is a sexist one.

As interview discussions continued, the same statements around skills and gender came up across all participants, including those like Brenda, Julene, Shonda, Megan and Spencer, who vocally acknowledged they believed the culture of the construction industry to be sexist. Julene, particularly, had me reframing my interpretation of the discussion of skills and gender when she explained how important it was to her that her male colleagues saw that she had the skills needed to do her job well, and that her value as a trades worker was not to fill a gender affiliated quota or expectation.

As the interviews progressed, I began to understand more deeply how women and non-binary people working on construction jobsites and in trades training programs face assumptions and accusations from male colleagues of being inherently unskilled in their trade and/or hired or excepted not because of their skill, but because they are not men. I also, through interviews, learned how women and non-binary trades workers were excluded from training opportunities and denied the chance to gain new skills within their trade. Brenda said she had difficulty, even as an instructor, accessing the same training and learning opportunities as her male colleagues. Julene shared that, in her experience in the field, journeymen do not want to teach women, citing fear of accidentally saying something offensive as a reason. In my own teaching, I often get from my own teaching that, without intervention, male learners dominate power tools and skills-based learning opportunities, while women, in particular, are left on the sidelines or cleaning the jobsite, struggling to get a turn at each skill.

Amber, Brenda and Krysta all urged fellow trades educators to ensure that the women and non-binary students were learning all the skills that their male classmates were learning. Megan spoke to the fact that her male students tend to dominate power tool skills practice when not otherwise prompted. Participants also acknowledge how the idea of focusing on skills rather than gender impacted their own professional lives. Julene mentioned that on the jobsite, she and other women were left performing tasks like clean-up while their male colleagues perform tasks requiring trade-based skills. Julene and Brenda

both made the point that they wanted it to be known by colleagues that they are in their positions because of their skills and not perceived to have been hired for their gender. Inspired in many cases by lived experience, there was a solid consensus among educators that for trades educators to push against the sexist industry of construction, they must apply teaching practices that recognize and give access to skills without allowing gender to set limits on who has access to or perceived acquisition of which skills.

***Soft Skills***

A clear divide seen above was the access to and perceived acquisition of technical skills by men while women and non-binary workers were relegated to learning and performing tasks requiring what participants consistently called construction soft skills like cleaning, team work, and administrative tasks. This divide can be addressed by the unilateral inclusion of soft skills in trades curriculum. In the literature review of this dissertation, I recognized that, for women and non-binary trades instructors to make an impact on the sexist culture of the construction industry, we must look beyond teaching the physical skills when connecting with students. **S**pecifically, on pg. 26, I note that instructors should be aware of current industry needs, address individual learner needs, and ensure student competency in industry-driven skills (Ryökkynen et al., 2019). I explained that one curiosity I held coming into this research was to explore what soft skills instructors were teaching and how soft skill instruction can be used to address the harsh realities of the construction industry and its track record of discrimination and harassment.

In the Trades Education of the Literature review on Pg. 24, PA programs are credited as a way to examine/address sexism. Cheney (2019) explains that training without jobsite pressures creates learning opportunities for a more skilled workforce while the Harry Bridges Center for Labor Studies (2024) suggests PA programs as a place to address and prevent workplace discrimination. In her interview, the participant, Shonda, illustrates these ideas, sharing how she focuses primarily on soft skills as a way to prepare learners hoping to become apprentices for the workforce.

Within the themes section of this work, Shonda, Brenda and Spencer all talked on the value of incorporating soft skills into their instruction and ways to do so. Shonda explains that her instruction

started by hiring apprentices with the intention of teaching them soft skills, like job site cleanup, needed to be successful in most trades. Spencer shared the many ways she models, teaches and encourages the development of soft skills like teamwork, empathy, and communication, holding them as values welders need to be successful. Brenda gave examples of how she taught soft skills needed to create a comfortable working environment for all. She gave the example of checking in when she sees a male student helping a non-male student in a way that is unhelpful, teaching her male students to ask someone if they need help before helping.

Pedagogically speaking, hooks reminded teachers of the value in incorporating soft skills into teaching practice. She explained that "to focus on covering material precisely is one way to slip back into a banking system. That often happens when teachers ignore the mood of the class, the mood of the season, even the mood of the building." (hooks, 2014/1994, pg. 156). When teaching only the industry-driven hard skills, we risk looking away from students and teaching directly to industry needs, rather than student needs.

Several instructors mentioned teaching soft skills driven towards building student confidence. The inclusion of confidence building skills and confidence building practices, in general, were consistently noted as techniques effective in preparing women and non-binary workers for jobs in construction. Confidence building was, on multiple occasions, noted as a method that should be prioritized in trades instruction. Though participants expressed varying views and opinions, particularly around sexism in construction, every single one of them recommended teachers work on building confidence among women and non-binary students (when mentioned) in their programs.

Kyrsta gave an account of how long building lasting connections with students allowed her to provide mentorship and witness the impact confidence building had on students in her program after they transitioned into the Workforce. Brenda also made the connection between educator relationships with students and confidence building, observing that, in a world where women and non-binary people are often told and shown they are not wanted, it only takes one person to believe in someone enough for them

to feel like they belong. Early on in my own instruction, I pinpointed confidence building as a skill that I would put at the base of my teaching strategies. Further into my trades instruction, I began to see that, even when women and non-binary students entered the program confidently, they often demonstrated that their confidence was challenged and shaken while in the program. These discussions reinforced my understanding around the importance of strategically weaving in confidence building practices in trades instruction.

***Banking System***

In the Researcher Positionality section of this dissertation, I acknowledge my own internal battle of teaching within a system that puts profit at the forefront. Brock speaks to this internal battle saying, "The oppressed are treated like commodities, imbued with skills that are bought and sold on the labor market for the profit of capitalists" (Brock, 2019, pg. 29). She evokes Freire's (1970/2017) pedagogical concept of the banking system.

Freire (1970/2017) and hooks (2014/1994) both speak to the need to counter education systems structured on profit and capitalism. Freire defines the term "banking system" as an education where teachers recite a prescribed narrative in which students are required to memorize and recite phrases, without understanding the students are used as receptors of information, or storage banks. And teachers are the depositors of information. Drawing on Freire's concept, hooks advises, "Caring about whether all students fulfill their responsibility to contribute to learning in the classroom is not a common approach in what Freire has called the 'banking system of education' where students are regarded merely as passive consumers." She goes on to warn that, "Since so many professors teach from that standpoint, it is difficult to create the kind of learning community that can fully embrace multiculturalism" (hooks, 2014/1994, pg. 40). Freire, hooks and Brock all highlight the importance of teaching in the interest of students, not of systems. Students come into trades programs with the desire to work in the trades, not knowing how harmful the systems and cultures of the industry can be. It is the role of the instructor to teach them that, even if it is against the interests of the employers and industry we teach within.

***Authenticity and Connection***

In the "Trades Education" section of the literature review of this dissertation, I speak to the role of pedagogical practices for trades educators (pp. 28-29 of this dissertation). I draw from the words of Brock and Freire, who urge educators to connect deeply with students. Outlined in the Themes section of this dissertation, Shonda, Spencer, Brenda and Roberta all speak to how they, as instructors, identify and apply this need for connection with students. Monica warns of the barrier false concepts of professionalism have on instruction, explaining that they should not bar connections with students. When asked what she wishes other instructors would do more of, Shonda says, "Have more stories, get more connection with the students. Be more authentic, because students can tell". Spencer spoke to the importance of teachers demonstrating authenticity of self, explaining that doing so builds community, creates connections, and builds student confidence. Megan talked about how authenticity and transparency can help women and non-binary students be safer when entering the workforce, explaining that, though she wants all of her students to land high paying jobs, she is honest about her experiences in commercial construction.

One component of authenticity and connection that was mentioned in discussions was instructor transparency. Julene made a particularly notable statement about the power of transparency when she spoke about giving career advising to a student explaining that, though she wanted the student to have a fruitful career, she did not want the women she taught and mentored to experience the harm she experienced in her own work and felt the need to be honest about her experiences. Shonda also spoke candidly about the benefit of being upfront about what the construction industry looks like. Roberta, Megan and Brenda all named transparency to prepare women and non-binary learners for careers in construction. Roberta, Shonda and Spencer gave recommendations specific to leading students to jobs within the industry where they may be less impacted by sexism within their career. Roberta gave a personal testament, acknowledging that her instructors led her specifically to an employer where she felt valued in her work.

The idea of the value in building sincere connections with students and instructors showing up as their authentic selves in the classroom is one that hooks advocates for all educators to hold. Warning of the danger of teachers showing up as only part of themselves, hook advises, “that, Indeed, the objectification of the teacher within bourgeois educational structures seemed to denigrate notions of wholeness and uphold the idea of a mind/body split, one that promotes and supports compartmentalization” ((hooks, 214/1984, pg. 16). She also encourages teachers to go beyond just teaching, but, in their authenticity, recognizes that they, too, can learn and grow in their classrooms and labs. She explains, “any classroom that employs a holistic model of learning will also be a place where teachers grow, and are empowered by the process” (hooks, pg.21). She later adds, “this is one of the primary differences between education as a practice of freedom and the conservative banking system which encourages professors to believe deep down in the core of their being that they have nothing to learn from their students” (hooks, 214/1984, pg. 152). The words hooks offers on authenticity in teaching resonate with the insight several participants shared, as mentioned above.

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Shonda and Spencer both spoke to how their authenticity enables them to build communities within their training programs. They also both gave accounts of the impact they saw from the communities that were built within their programs. Spencer gave examples of how, as students begin to build community, lines of communication are opened. Shonda explained that connections with learners became deeper as trust began to mount between them. Both Spencer and Shonda shared how they saw that learners communicated more directly and effectively and showed more care for each other as students formed a community in their programs. I have seen this in my own teaching, as well. Whether it is through practices I or my co-teachers implemented or from actions coming from the students themselves, when students are able to build a community in their training program, the benefits are evident. Some groups form stronger community bonds than others. In groups that show a stronger development of community, I have seen students have higher attendance, and more students participating in more skills-based activities.

***Teaching for social change***

Demonstrating the model that fractal theory provides, several participants provided examples of ways they teach with the intention of changing the industry. Roberta stated that she and her colleagues address sexism by adding in anti-discriminatory practice expectations in their orientation and week one process, saying that it is framed as a "zero tolerance policy". Offering practices beyond setting expectations for students on discrimination, Bettina Love (2019) urges educators to teach learners to fight against the systems that perpetuate structures of discrimination. Love explains, "Padagogies must call out and teach students how racism, sexism, homophobia, transphobia, Islamaphobia, are structural, not people behaving poorly. They must criticize systems that perpetuate injustice, such as the educational survival complex, while pushing for equitable communities, schools and classrooms" (Love, 2019, pg. 55). Trades education is housed within an industry that perpetuates and excuses acts of discrimination. To change those systems, trades students, who are the future of the workforce, must be shown through modeling by instructors how to call out those systems.

In the focus group, a discussion came up about the changing workforce within the construction industry, as one generation retires and leaves a gap in leadership positions. Piya brought light to the potential this phenomenon has for changing the industry as trades instructors. Roberta expressed the inspiration she felt from Piya's realization, noting that we, as instructors, are training the future of the industry and, therefore, have a lot of control over what changes might look like. Brenda gave a real life illustration of what this change looks like as someone who has been teaching in her program for over a decade. She shared that folks that were once in her training program are now in leadership positions within the industry, occasionally recruiting and hiring her current students.

When talking about teaching for change, I think the exhaustion several participants mentioned might be the biggest barrier to creating change through our work. I am inspired by the voices in interviews that carried excitement, enthusiasm, creativity and hope. I am reminded of how imperative it is to hang onto that hope. Lorde urges, "In order to be whole, we must recognize the despair oppression plants within each of us— that thin persistent voice that says our efforts are useless, it will never change, so why bother, accept it." (Lorde, 1984/2007, pg. 142). In doing so, she reminds us not to give in to the exhaustion that tempts us to believe we cannot create change. Freire warns that to adhere to the banking system is to deny that we can create change. He explains that in the banking system, "the teacher talks about reality as if it were motionless, stagnant, compartmentalized and predictable" (Freire, 2017, pg. 44)". Not only is it important not to give up on our ability to create change, it is our responsibility as conscientious instructors to do so. In addition to teaching with the clear intent of changing the sexist system of the construction industry, most trades instructors have responsibilities and tasks beyond teaching that they can also perform in a way that aims to address sexism in construction.

**Changing Systems of Sexism**

Though specific teaching practices were named by participants, supported above, as means to address sexism within the construction industry, instructors also gave examples and visions of changes they saw being made or needing to be made within trades education systems. In trades education,

instruction and curriculum development are often considered the primary tasks of most educators. In addition, most trades training programs require trades educators to engage in duties that impact the program and system they teach within. For example, it is within most trades educators' roles to build relationships with partnering employers, develop supportive relationships with program colleagues and support students to increase program completion and job placement rates. Participants explained how each of those tasks can create change in the systems they teach within. Participants also expressed the additional weight carried and challenges faced by addressing sexism from performing those tasks, especially when not supported by employers and colleagues.

### *Identifying Allies*

The role and importance of allyship from men, especially those working as colleagues in trades education, was consistently noted across discussions. Megan cited male allyship as a primary component in supporting women and non-binary students. Brenda talked about how she could better support women and non-binary students, had she seen more allyship for her male colleagues. Perhaps the most notable testimony of male allyship came from Spencer. In both her personal interview and in the focus group, Spencer credited one specific instructor for consistently encouraging her and assuring her that she belongs in welding. She detailed how he provided allyship from the start of her career, as she journeyed through her career path, and as a colleague, after he encouraged her to begin teaching and work with him and an instructor.

In addition to allyship within trades programming, participants highlighted the importance of allyship among partnering businesses. Industry connections are a staple to every trades program. Participants shared experiences of communications with partners. These discussions demonstrate how focusing on the needs of trades students rather than those of employers proves to be instrumental in supporting women and non binary students in trades programs as they exit into employment. Piya, Spencer and Roberta shared how they develop dialogues with employers and have seen beneficial results in the employment and treatment of women and non-binary trainees. This resonated with brown's theory

of fractals. Participants demonstrated how, by connecting with contractors and employers, they are able to make impacts within the construction industry beyond the programs they work within. As taught by brown's fractal theory, these educators are ensuring that the patterns they create within their programs cycle upwards (brown, 2017).

***Tokenization and Exhaustion***

Both Brenda and Julene expressed concern about requirements for job sites to have quotas as a measure to sustain equitable hiring practices required by local state and federal governments. Both women expressed concerns that they were seen as an "equity hire" and often felt tokenized, being asked to do additional labor to support women or viewed their employment as "checking off a box", rather than being seen for their skills. As mentioned above, brown warns of the dangers of having women and non-binary people on jobsites for superficial purposes, as brown explains, deflects from the need for deeper systemic work and community building. She goes on to explain that, like ecosystems found in nature, diversity is needed for environments to thrive, as each part of nature has a role and purpose. Like our environment, workplaces face crisis when diversity is not present or the diverse roles are not valued or honored (brown, 2017).

Both brown and Lorde spoke to the price of hiring women, and non-binary people for the purpose of simply fulfilling a requirement in the "Sexism in Construction" section of the literature review. Several participants referred to this act as tokenization, several mentioning the exhaustion it brings as noted above in the Themes section. On page 18 of this dissertation, Lorde points out that the tokenization, particularly true for Women of Color, is brought on by tokenization because of the requirement to do additional labor including teaching others about their own identity (Lorde, 1984/2007). Lorde expands upon this concept of the responsibilities put on oppressed identities when in isolation saying, "In other words, it is the responsibility of the oppressed to teach the oppressors their mistakes." She continues explaining "Women are expected to educate men. Lesbians and gay men are expected to educate the heterosexual world. The oppressors maintain their position and evade responsibility for their own actions." (Lorde, 1984/2007).

Lorde's words name the work and labor required by the oppressive practice of responsibility avoidance that cause the exhaustion that Julene and Brenda spoke to in their interviews.

This extra teaching requirement and the exhaustion it caused is visible through the stories of both Brenda and Julene. Brenda speaks directly to the isolation and abandonment she faced when running a program designed to support women and non-binary students in trades at her school, with little to no back up from colleagues at her college, who she says only hosted the program for its optics. Following the fizzling out of the program after putting in so much energy with so little support, Brenda spoke to the harm done, expressing sentiments of burnout, feeling used, and loss of hope. After finally receiving sponsorship from her union, Julene details the heartbreak she faced when a union leader used a Trump executive order as a reason to shut down the women's group chapter she ran down entirely. Not only were women forced to take responsibility for providing the support they needed and educating and advocating to male colleagues to do so, but they were also made to fight for the right to perform the additional labor. Losing that fight, Julene explained, led to burn out and disappointment so severe, she chose to leave union work and begin teaching in her trade.

Lorde warns of the intention and power behind the act of tokenization reminding us to, "Make no mistake, you will be courted; and nothing neutralizes creativity quicker than tokenism, that false sense of security fed by a myth of individual solutions" (Lorde, 1984/2007, pg. 142). Lorde implies that exhaustion and burn out caused by tokenization that several participants spoke to experiencing are intentionally designed to neutralize us, robbing us of the energy and creativity we need to challenge and change the construction industry. Though the impacts of acts of sexism lack tokenization can thwart progress in changing the construction

**Connecting Theory**

I chose brown's theory of fractals because the concept embodied the idea of tiny changes within small corners of a large system echoed out as catalysts for changes and shifts throughout larger systems and cultures. Inspired by nature, fractals gave me hope for the power trades educators have to change the

sexist culture of the construction industry, from our classrooms, labs and jobsites. As brown puts it, “what we practice on the small scale sets the patterns for the whole system”. Throughout the research process, I thought most about the application of fractal theory when I was listening to the end of the focus group recording, hearing the tone change in participants, first in one person, and then as a group. Sentiments of hopelessness, exhaustion and defeat transitioned to energy, creativity and hope as participants verbalized that, as instructors, they are forming the next generation of workers and leaders within the industry. I felt hope, as I listened to them acknowledge the power for change that comes with that role.

Confidence building, soft skill instruction, community building, employment readiness, transparency, engaged pedagogy, valuing skill over gender were all practices instructors consistently spoke to in our discussions. They are also, from a fractals-based lens, patterns these educators are creating and sending out. Patterns like these, brown explains, “emerge at the local, regional, state, national and global level— basically wherever two are more social change agents are gathered. brown goes on to call her work on fractals a collective invitation to, “practice the world we wish to see in the current landscape” and to “resist the onslaught of oppression” (brown, 2017, pg.55). Many of the statements made by participants indicated that there are new patterns being created within trades programs that, according to fractal theory, will echo out to change patterns within the larger systems of the construction industry.

As I was listening to participants speak, I was able to recognize a divide drawn clearly by energy levels between those of us that acknowledged sexism in trades in our daily work, and those who had not yet begun to work specifically addressing sexism in construction. Expressions of exhaustion and burn out came from Brenda, Julene, and Piya, who have worked specifically with programs and groups geared towards women and non-binary workers in construction. In addition to inviting social change agents to resist the onslaught of oppression, brown offers the remedy of “organizing rather than burn out and competition”. The problem in our work is the lack of community to organize with, as, being in such a male dominated industry, we are usually isolated. Although participants like Krysta acknowledge the

energy it takes to create and maintain communities of women in construction, brown's words around fractal theory speak to the energy, love and relief these communities can provide in this work.

I came into this research with a specific idea of what communities of women and non-binary people teaching in construction might look like, and I am leaving with a new concept. Women in Trades conferences, Sisters in the Brotherhood groups and other women's chapters within trades unions, and like groups that required unpaid organizing, and unpaid, under-supported work is what I originally thought of. Though the interviews I conducted were my research, they also provided me with a new vision of what these could look like.

We are not just in the construction industry; we are in education. Many of us are academia-adjacent, as we teach within the college system. Experience and idea sharing in any professional setting, but especially in education can be competitive. When guiding us in fractal work, brown acknowledges this competitiveness. To address it, she shares, we need to, "move from competitive ideation, trying to push our individual ideas, to collective ideation, collaborative ideation". (brown, 2017, pg. 59). These discussions taught me that communities of women and non-binary people teaching in trades could be mutually beneficial discussions with consideration of each other's needs, pushing each other into new ways of thinking, but not pressuring. I have also learned, from discussions like these, we can ensure that fractal sized patterns we create move upward and outward by sharing them. From these discussions, both with instructors and between authors, thinkers and researchers, I developed 8 recommended actions. It is my hope that by following these 8 recommendations, trades educators can create new patterns within construction trades training programs that repeat themselves, eventually repeating upward to create changes that address sexism within the larger construction industry.

## Recommendations

Taken from the themes, connection to literature, and analysis, I have developed the following recommendations for instructors teaching within construction trades that acknowledge the sexist culture

of the construction industry and share a hope of challenging and changing it. Some of these are recommendations around supporting women and non-binary students as they pursue careers in construction and face the sexism prevalent within the industry. Others are recommendations on how we, as trades educators, can push back against and even change the construction industry, addressing its sexist culture as we train the future workforce.

**Partnerships with women and non-binary forward employers**

Trades educators can vet industry partners and build and maintain relationships with industry employers who already have proven track records of hiring and supporting women and non-binary workers. As mentioned in above sections, employer connections are a necessary component of most trades' preparation programs. Though they have potential to create a dynamic that caters towards industry needs, rather than student needs, relationships with industry employers also ensure trainees exit into gainful employment programs. As discussed in interviews, simply placing students into jobs according to employer needs does not provide adequate support to women and non-binary workers transitioning into the field. Connecting women and non-binary students with employers that have proven dedication to pushing against the sexist culture of construction can mean that students will feel more valued in their jobs, be more likely to maintain employment, and less likely to face sexist discrimination in their work. Once new industry partnerships are established, trades educators can counsel industry partners on best practices for supporting women and non-binary workers graduating from training programs.

**Inclusive Curricular and Teaching Practices**

Trades instructors can develop curriculum and practices that teach learners that a person's ability to learn or perform a skill is unrelated to their gender. When women and nonbinary students have access to an entire curriculum, all students are modeled a workplace that does not assign jobs or tasks based on gender. As evident throughout this research, it is clear that women and non-binary workers can do construction trades work. When instructors allow colleagues, students and employers to openly doubt a student's ability based on their gender, no skills are gained by anyone. The primary impact of allowing

this doubt to precede, as hooks argues in the literature review section of this dissertation, would be that women and non-binary students are clearly sent a message that their labor and skills are less valuable than those of men (hooks, 1994/2000).

As mentioned in the above analysis, instructors across interview discussions consistently acknowledged that when instructors make an effort to ensure all students gain every skill taught, women and non-binary students benefit greatly. Educators noted a visible increase in confidence level, demonstrated growth in competencies, higher likelihood to complete the program, and stronger support and connections from male classmates. As detailed above, several educators shared their own experiences that demonstrated that when one person believes women and non-binary trades trainees can master the skills of their trade, they then begin to believe themselves to be capable of doing so. When instructors teach women and non-binary students as if they know the students are capable of acquiring the skills of their trade, they are communicating the belief that women and non-binary trades students can do the work.

**Integration of Soft Skills**

Instructors can include curriculum and approaches that teach soft skills needed to be successful in the trade. This recommendation comes, in part, from the consistent value expressed by participants that trades instructors who teach soft skills are better at preparing all students for the work force. The recommendation is reinforced by concepts expressed in above nodding to hooks, Brock and Freire's reminders of the value of self-actualization of both students and instructors. This creates community as students can build skills like empathy and teamwork. When trades instructors teach to the whole student, they bring in the parts of trades work that help workers become valuable to teammates and employers in all parts of their work.

- Clean-up: Though it is widely considered a soft skill, cleaning up a jobsite is a very important skill for most trades. As mentioned above, when all students are intentionally taught all skills, the concept of gendered skills, which prevents the self-

actualization of women and non-binary workers in training, begins to fade, If instructors stress that all students are expected to clean-up the job site and teach them all how to do so, women and non-binary students are less likely to be handed a broom by their classmates while their male counter parts grab a the saws. Women and non-binary students will also be less likely to accept jobs where their work is relegated to clean-up.

- Teamwork: As mentioned in above sections, several instructors noted how modeling and teaching team work skills improved their program dynamics and gave additional support to women and non-binary students in their classroom. When instructors ensure that students are looking out for each other and working as a team, women and non-binary students are less likely to get hurt on the jobsite.
- Empathy: The concept of teaching empathy came up a few times when participants responded to questions about how we, as instructors, can change the sexist culture of the construction industry. When trades instructors model empathy and include a curriculum that teaches students to try to get to know each other and understand each other's struggles, male students learn to feel more comfortable holding their male classmates and, eventually, colleagues, when engaging in sexist discrimination.

**Authentic and Approachable Instruction**

Instructors can demonstrate authenticity and approachability in their instruction. In the above sections of this dissertation, I brought in words from both Brock and hooks on the power of instruction that promotes authenticity from both teachers and learners. Multiple participants spoke to the potential and actualized impact of authenticity and approachability in instruction. Spencer's testimony demonstrated how being authentic in communication with students spread a culture of genuine and direct communication throughout her courses. She gave the example of being honest when students ask how she is doing and then seeing students repeating this honesty among their peers. Shonda

Krysta demonstrated how her availability for connection supports women in her program to be successful after completing the program, providing support and advice as graduates seek and adjust to new employment. When she let students know she was available to connect, they responded by going to her when they needed the support. Shonda brought forward the tool of storytelling and joking as a means to demonstrate approachability and authenticity to students. She also explained that being honest about what life was like for her in her trade was a form of authenticity she found was particularly beneficial to students. Megan identified a barrier to instructor approachability and authenticity being the common perception that connection and transparency can be interpreted as unprofessional in higher education. hooks speaks to a teacher's self-actualization as a professional skill that must be learned and practiced, rather than an unprofessional dropping of a guard, as Megan identified as a common perspective.

When trades instructors find ways to maintain professional boundaries while also expressing their authentic selves, women and non-binary trades students are supported in ways the sexist systems of the construction industry would not otherwise facilitate. When trades instructors are honest about their experiences in their field, make room in class for stories and jokes, and make efforts to have genuine connections with students, students follow that lead and repeat the behavior instructors model. By modeling authenticity and striving for approachability, instructors create an environment where students begin to feel comfortable asking for help when they need it.

**Community Building as Instructional Practice**

Instructors can integrate community teaching practices intended to build community building within their programs among students. All participants made at least one statement on the role of community building in their programs. As mentioned throughout this dissertation, brown's concept of fractals (brown, 2017) details how community building practices are a key part of making changes within a large-scale system from the smaller pieces and parts of that system. In the literature review section of this dissertation, I used the words of Wheatley (1998), Lorde (1984/2007), and (Gonzales & Shotton, 2022) as a guide to building communities that embrace and acknowledge differences, rather than bonding

on commonalities, as those are the communities that thrive. Teachers can encourage students to create community in their classes and give them time to do so. In my own experiences, class barbeques and potlucks are commonplace in trades programs, and students look like a community when participating in them. The educators I interviewed gave examples of leaving room in their day for stories and jokes, asking students how they are doing, and organizing outside of class as ways to build communities in their classroom.

Many of the instructors interviewed spoke specifically to the impact of creating communities among the women and non-binary students in their programs. Impacts of communities of women and non-binary students noted by participants included increased confidence and comfort level, increased number of women and non-binary students exiting into employment, and a lower likelihood of the students dropping out. Tactics that interviewees suggested included grouping women and binary students together when possible, encouraging women and non-binary students to participate in existing affinity groups like Sisters in the Brotherhood, and connecting personally with women and non-binary students in a mentorship roll. Several instructors also said they connect with students after they have entered the workforce, forming a supportive environment for women and non-binary workers within their trade. For example, one instructor said she regularly hikes with graduates of her program and other women working in her field while another said that she joined a women in construction golf club, popular among program graduates in her trade.

**Transparency**

Trades instructors can provide transparency by creating an honest and accurate picture of what jobs in their respective trades are like for women and non-binary workers. Throughout this work I have expressed a feeling of guilt around preparing women and non-binary workers for careers in a field that does not want women and non-binary people in it. This sense of guilt and fear has been echoed by others in interview discussions. By being honest with learners about experiences we have had, how we see

women and non-binary people treated in our field, and which jobs within the field may cause the most harm to women and non-binary workers, we create clear expectations for students.

One push back I predict students may give is the assertion that expressing these realities may take away motivation for women and non-binary learners and create fear. If instructors also provide transparency on how women and non-binary workers are navigating harmful situations in the field, this can mitigate fear and help regain motivation. Students have hope that, though the situations are harmful, it may be possible to mitigate leave or, in some circumstances mentioned by participants, prevent them. Instructors can also address discomfort by acknowledging that, just like we learn with technical skills, discomfort in the classroom is a necessary part of the learning process as it prepares us for the discomforts we will likely face on jobsites.

If instructors do not have experiences to pull from that would provide a picture of what life may be like in the field for women and non-binary workers, they can draw from the lived experience of students, if possible. Instructors can also invite guest speakers they know will give an honest perspective and have applicable lived experience to share. To meet potential guest speakers, instructors can reach out to existing affinity groups for women and non-binary workers. Instructors can also work within their training program to develop a budget or incentive for such guest speakers, so they can be compensated rather than expected to contribute unpaid labor.

**Confidence building**

Confidence building was consistently noted by participants as a technique effective in preparing women and non-binary workers for jobs in construction and was, on multiple occasions, noted as a method that should be prioritized in trades instruction. Students must have confidence to exit the program into gainful employment and to maintain that employment. Women and non-binary students benefit from curriculum and practices focusing on confidence building as they may be perceived as an outsider in the field and need instructor support gaining the confidence needed to feel like they belong in a field that is notably unwelcoming to women and non-binary workers. Students who have not gotten adequate support

in building confidence may not not quit a job that harms them, this is especially relevant to students who are not men, as they are more likely to face harm in the workplace in the form of sexist discrimination. Confidence building practices can also help men in the program to gain the confidence needed to stand up against sexist discrimination should they see it in the workplace.

Facilitating discussions around what a confident worker looks like was one method of confidence building that instructors mentioned in interviews. Trusting students to complete difficult tasks,instructor confirmation students are competent in skills and abilities they are learning, and providing students with opportunities for success are all examples of confidence building methods trades instructors should be implementing, if they are not already. Instructors also talked about building confidence in students exhibiting fear, several noting that women in their program often expressed fear around using tools. Reminding students that they are capable and giving them tasks to work up to more intimidating work are ways that instructors described building confidence in students who expressed fear.

**Identifying and asking of male allies**

The role of male allies was consistently highlighted in discussions. In trades education, to better prepare women and non-binary students for careers in construction, committed male allies are needed. Male allies need to do work directly associated with supporting women and non-binary students. This will not only increase the success of those students, but it will help programs retain any women and non-binary instructors and support staff already working within them by preventing the burn out that occurs when women and non-binary faculty and staff are held solely responsible for supporting women and non-binary learners. In some cases, women and non-binary staff and faculty are best equipped to support women and non-binary students, especially when it comes to efforts of building communities focused on women and non-binary workers, for example. In these cases, male allies are needed to take on other tasks so their women and non-binary colleagues aren't simply bridled with additional tasks with no relief.

To demonstrate true commitment to the success of women and non-binary people working and learning among them, male allies need to speak up against sexist discrimination when they see it. If

students are doubting a teacher because she is a woman, for example, male colleagues need to back that woman up. If a woman confides in a male colleague that she is experiencing a form of discrimination, her male colleagues need to to listen, believe, and respond accordingly. If a male colleague witnesses discriminatory behavior of a student or colleague, it is his responsibility to speak to it and let it be heard that he believes it is not right. He is also responsible for taking any follow-up action needed. As outlined previously in this work, trades educators have a power to change the construction industry and unweave the sexism ingrained in its culture. When the responsibility of making the construction trades a safe place for women and non-binary people falls entirely on women and non-binary instructors, it harms them greatly. Burnout, isolation, and dehumanization are among the impacts of this harm. Women and non-binary workers that are not white, must carry this harm coupled with that of racist discrimination, amplified by the additional isolation caused othered-ness by race.

## Conclusion

This dissertation began with a story of how I brought two women into a space, hoping they could learn about career options within construction. What I learned at the event was that I felt unsure of if I should be bringing women and non-binary workers into this industry, as the industry did not appear to want them in it. I became uncertain that, after learning skills taught in our program, women and non-binary workers would be able to find gainful employment that treated them how they deserved to be treated, according to US employment laws, at the very least.

In discussions around supporting women and nonbinary students in construction training programs, the topic of recruitment and increased enrollment of women and non-binary students is often a part of resulting conversations. However, none of the recommendations I give pertain to the recruitment of women and non-binary students. Though, in addition to teaching skills and facilitating job placement, student recruitment is, in most cases, a responsibility of trades educators, I found no place for this topic within my recommendations section or as a highlight of any other section. In my own work, I have also

stopped recruitment efforts specifically geared towards enrolling more women and non-binary students in the program.

In early sections of this dissertation, I shared work done around the inclusion of women in the construction industry that center the needs of the industry, rather than needs of the women and non-binary workers they are inviting to join the industry. Priority hire initiatives, like the ones brought forwards by the Carter and Biden administrations, highlight a shortage of labor in the construction industry as a reason for recruiting women and nonbinary workers (Eisenberg, 1998/U.S. Office of Public Affairs, 2023). This common narrative provides a win-win scenario that tells construction employers that they stand to benefit from hiring and training women and non-binary workers. In many cases, it requires employers to hire women and non-binary workers onto their job sites (U.S. Office of Public Affairs, 2023). These initiatives and overarching intentions do not, however, change the fact that the construction industry, its apprentice programs, its employers, its male employees and its unions are sexist and do not want women and nonbinary workers to be successful within or even exist on their job sites. As a result, these recruitment efforts are leading women to experience acts and impacts of sexism like those shared by participants. We recruit women and non-nonbinary workers into our programs, and, upon completion, we lead them into an industry that does not want them there, where they are unable to find steady meaningful work, face jobsite harassment, and the harm they experience outweighs the benefits they see.

When we continue to recruit women and non-binary workers into trades training programs without first making substantial efforts to fight against sexism in construction employment systems, including our own programs, women and non-binary workers continue to be harmed in ways mentioned throughout this dissertation. Several of the women I interviewed had been able to significantly increase the numbers of women in their programs, some saying they were also able to provide job placement and retention for them. However, I do not feel it is beneficial to speak to the recruitment of women and non-binary students into construction trades programs before addressing the fact that the construction industry maintains a sexist culture and does not want success for women and non-binary workers within it. It is my

hope that by implementing these recommendations the construction industry will change, beginning from what we see in our classrooms and shops. At the time I am writing this dissertation, however, the construction industry is not ready to welcome women and non-binary workers into it. When we, as instructors, see the changes in the industry we hope to see for our students, then we should begin to shift efforts from addressing sexism to the recruitment of women and non binary students.

When the women and non-binary students we already have begin landing and retaining jobs at the same rates as their male colleagues and are given as many working hours as their male colleagues, then trades educators can work on increasing the number of women and non-binary learners entering their training programs. When women and non-binary instructors are not completely exhausted and isolated, when pregnancy and parenting leaves are offered to construction workers, then trades educators can look at how to get more women in training programs. When all welding shops have bathrooms for women and non-binary workers, when women and non-binary learners and workers have the same learning opportunities as men, when women and non-binary workers are not consistently harassed on jobsites, then educators send energy towards discussing how to get more of them into training programs.When reports of harassment are taken seriously by managers, owners and supervisors, when women and non-binary workers are represented in all levels and job titles of construction, then it will be reasonable and helpful to give recommendations on how to recruit more women and non-binary students in trades training programs. Until then, my final recommendation is that instructors and educators focus on better supporting the women and non-binary workers, learners and educators we already have within our respective trades and look at targeted recruitment as the next step to take, once those students meet the standards of success mentioned above.

**References**

Aho, B. (September 9, 2025). *Governor Ferguson signs Executive Order Requiring Project Labor Agreements for Workers on Critical Infrastructure Projects Over $35 Million. Office of Washington Governor Bob Ferguson*. Ferguson.https//governor.wa.gov/news/2025/governor-ferguson-signs-executive-order-requiring-project-labor-agreements-workers-critical

Azungah, T. (2018) "Qualitative research: deductive and inductive approaches to data Analysis". *Qualitative Research Journal*. https://doi.org/10.1108/QRJ-D-18-00035

Battle, U. V. "Nannie Burroughs Fought for Rights of Women", *Afro-American Red Star*, February 3, 1996. Bureau of Labor Statistics. *Household Data Annual Averages*, Table 11, Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity, Labor Force Statistics from the Current Population Survey, 2022 (last modified Jan. 25, 2023).

Brock, R. (2019). *Sista talk too*. Peter Lang.

brown, a.m., & De Novais, J. (2024). *Loving corrections*. AK Press.

brown, a.m. (2017). *Emergent strategy: Shaping change, changing worlds*. AK Press.

Burrows, C. A. (2023, May). *Building for the future: Advancing Equal Employment Opportunities in the Construction Industry*. US EEOC. https://www.eeoc.gov/building-future-advancing-equal-employment-opportunity-construction-industry

Center for American Progress. (2018). *Gender matters*. https://www.americanprogress.org/issues/women/

Chan, S. (2009). Perspectives of new trades tutors: boundary crossing between vocational

identities. *Asia-Pacific Journal of Teacher Education*, *40*(4), 409–421. https://doi.org/10.1080/1359866X.2012.724656

Chan, S. (2020). *Identity, Pedagogy and Technology-enhanced Learning: Supporting the Processes of Becoming a Tradesperson*.

Chilisa, B. (2020). *Indigenous Research Methodologies*. SAGE.

Crain, K. & Heischmidt, K. (1995). Implementing business ethics: Sexual harassment. *Journal of Business Ethics*, *14*(4), 299–308. https://doi.org/10.1007/bf00871900

Community and Technical Colleges of Washington State Board (2026). https://www.sbctc.edu/colleges-staff/programs-services/i-best/default.aspx

Coulston F, Lynch F, Vears DF. (2025). Collaborative coding in inductive content analysis: Why, when, and how to do it. *J Genet Couns*. 2025 Jun;34(3):e70030. doi: 10.1002/jgc4.70030. PMID: 40305144; PMCID: PMC12042989.

Denzin, N. K., & Lincoln, Y. S. (Eds.). (1994). *Handbook of qualitative research.* Sage Publications, Inc.

Desmond, M. (2019, August 14). American capitalism is brutal. You can trace that to the plantation. *The New York Times Magazine*. https://www.nytimes.com/interactive/2019/08/14/magazine/1619-america-slavery.html.

EEOC Sues Alto Construction and J.A. Croson for Race Discrimination, Harassment and Retaliation. (2022, September 30). *EEOC.Gov*. Retrieved April 19, 2024, from https://www.eeoc.gov/newsroom/eeoc-sues-alto-construction-and-ja-croson-race-discrimination-harassment-and-retaliation.

Eisenberg, S. (2018). *We'll call you if we need you: Experiences of women working*

*construction*. ILR Press, an imprint of Cornell University Press.

Freire, P.. *Pedagogy of the Oppressed.* (1970/2017). Penguin Random House UK.

Gonzales, L.D., & Shotton, H. (2022). Coalitional refusal in a neoliberal academy. *International Journal of Qualitative Studies in Education, 35*, 540 - 552.

Guest, G., Bunce, A.E., & Johnson, L. (2006). How Many Interviews Are Enough? *Field Methods, 18*, 59 - 82.

Guy-Sheftall, B. (Ed.). (1995). *Words of fire: An anthology of African American feminist thought*. The New Press.

Harry Bridges Center for Labor Studies. (March, 2024). *Building Futures: Pre-Apprenticeship in Construction and Beyond*. The University of Washington.

Riddle, K., & Heaton, K. (2023). Antecedents to Sexual Harassment of Women in Selected Male-Dominated Occupations: A Systematic Review. *Workplace health & safety*, *71*(8), 356–365. https://doi.org/10.1177/21650799231157085

Hesselbein, M., Goldsmith, R., Beckhard, R. &F. Schubert (Eds.), *The community of the future* (pp. 9-19). San Francisco: Jossey-Bass.

Hegewisch , A., & Mefferd, E. (2021). (rep.). *A Future Worth Building: What Tradeswomen Say about the Change They Need in the Construction Industry*. Washington, DC: The Institute For Women's Policy Research.

Hillison, J. (1995). The coalition that supported the Smith-Hughes act or a case for strange bedfellows. Journal of Career and Technical Education, 11(2). https://doi.org/10.21061/jcte.v11i2.582

Heubeck, E.. (2025, January 24). "CTE Grows in Popularity Among Students, But Teachers Are Tough to Find". *Education Week*. https://www.edweek.org/leadership/cte-grows-in-popularity-among-students-but-teachers-are-tough-to-find/2025/01#:~:text=Recent%20statistics%20show%20a%20sharp,the%20most%20popular%20subject%20area.

hooks, b. (2015). *Feminist theory: From margin to center* (3rd ed.). Routledge. (Original work published 1984)

hooks, b. (2014/1994). *Teaching to transgress*. Routledge.

Jain, N. (2023). "What is Focus Group Research? Definitions, Types, Methods and Examples". Ideascale.

Keating, C. (2005). Building Coalitional Consciousness. *NWSA Journal*, *17*(2), 86–103. http://www.jstor.org/stable/4317127

Kendi, D. I. X. (2016). Stamped from the beginning. Avalon Publishing Group.

Krefting L. Rigor in qualitative research: the assessment of trustworthiness. (1991). Am J Occup Ther. 1991 Mar;45(3):214-22. doi: 10.5014/ajot.45.3.214. PMID: 2031523.

Lannigan, L. (2024, October 8). Latest crane count keeps Seattle area in second place. *Daily Journal of Commerce*.

Larsson NP, Craven L, Madsen IEH. The role of gender composition in workplace sexual harassment. Eur

J Public Health. 2023 Oct 24;33(Suppl 2):ckad160.1327. doi: 10.1093/eurpub/ckad160.1327. PMCID: PMC10595555

Lorde, A. (2007 original work published 1984). *Sister outsider: essays and speeches.* Revised edition. Crossing Press.

Love, B. L. (2019). *We want to do more than survive: Abolitionist teaching and the pursuit of educational freedom*. Beacon Press. National Women's Law Center (Ed.). (2014). (rep.). *Women in Construction: Still Breaking Ground*. Washington, DC: National Women's Law Center.

New York State Department of Labor. (2023) *Report on Transgender, Gender Non-conforming, and Non-binary Persons in The workforce*. https://nysdolreports.com/2023-tgncnb/#:~:text=The%20Department%20tracks%20national%2C%20state%20and%20local,are%20trans%2C%20gender%20non%2Dconforming%2C%20non%2Dbinary%20or%20intersex.

NAWIC. (2023) *Building a Million Women in Construction: A Pledge for Change*. The National Association of Women in Construction. https://nawic.org/building-a-million-women-in-construction/.

NNCER. (2025) *Building Better: A Women in Construction Study*. National Center for Construction and Education Research. https://www.nccer.org/media/2024/01/Building-Better_A-Women-in-Construction-Study.pdf

Ntsean, P.G. (2009). *Community Leadership and Empowerment:Botswana Case Study*. Kampala,

Uganda: Institute of Social Transformation.

O'Banion, T. U. (2018). A brief history of workforce education in community colleges.

*Community College Journal of Research and Practice*, *43*(3), 216–223.

https://doi.org/10.1080/10668926.2018.1547668

Oettinger, J & Hebbar, L. (2020). *Access to Opportunity: Using Preapprenticeship*

*Programs to Connect to Registered Apprenticeship A BRIEFING PAPER FOR THE CALIFORNIA*

*APPRENTICESHIP INITIATIVE EVALUATION*. Foundation for California Community Colleges.

Social Policy Research Associates

Patel, L. 2017. *Decolonizing Educational Research*. Rutledge.

Peach, H. (2022). *Thick skin: Field notes from a sister in the brotherhood*. Anvil Press.

Raj, A., Johns, N. E., & Jose, R. (2020). Gender Parity at Work and Its Association With

Workplace Sexual Harassment. *Workplace health & safety*, *68*(6), 279–292.

https://doi.org/10.1177/2165079919900793

Richards, K. (September 25, 2025). WPDE ABC 15.

https://www.youtube.com/watch?v=0BsL1q7qH6A

Rosala,R. (2021) Hennigan, K. (2022, June 3). *How Many Participants for a UX Interview.* Nielsen

Norman Group. https://www.nngroup.com/articles/interview-sample-size/

Rosenberg, M. (2016, July 18). Seattle tops the nation in tower cranes for third straight year

as construction reaches new peak. *Seattle Times*.

RPAC Seattle. (n.d.). https://www.rpacseattle.org/

Sultana, F. (2007). “Reflexivity, Positionality andParticipatory Ethics: Negotiating Fieldwork Dilemmas in International Research”. *ACME*.

Saujani, R.. (2022). *Pay Up: The Future of Women and Work (and Why It’s Different Than You Think)*. One Signal.

Thomas, Chuck. (2019, March 13). “The State of American Trade Schools”. *Popular Mechanics*. https://www.popularmechanics.com/technology/a26789417/trade-schools/

Underhill-Sem, Y. T. R.-R.-o.-T. (2020). The audacity of the ocean: Gendered politics of positionality in the Pacific. *Singapore Journal of Tropical Geography*, *41*(3), 314–328. https://doi.org/10.1111/sjtg.12334

U.S. Bureau of Economic Analysis. (2026, June 25). *GDP by Industry*. Retrieved from GDP by Industry | U.S. Bureau of Economic Analysis (BEA).

U.S. Bureau of Labor Statistics. (2025, August 1). *Employment situation summary - 2025 M07 results*. U.S. Bureau of Labor Statistics. https://www.bls.gov/news.release/empsit.nr0.htm

U.S. Bureau of Labor Statistics. (2024, April 25). *Employment, Hours, and Earnings from the Current Employment Statistics survey (National)*. U.S. Bureau of Labor Statistics Databases, Tables & Calculators by Subject. https://data.bls.gov/timeseries/CES2000000001?amp%253bdata_tool=XGtable&output_view=data&include_graphs=true

U.S. Bureau of Labor Statistics. (2026, February 20). *CPS tables*. U.S. Bureau of Labor Statistics.

https://www.bls.gov/cps/tables.htm

U.S. Census Bureau. (July 1, 2026). *Monthly Construction Spending, May 2026*. Economic Indicators Division

Construction Expenditures Branch. U.S. Department of Commerce. Retrieved July 14, 2026, from https://data.census.gov/

U.S. Department of Education, National Center for Education Statistics (2018). *Career and Technical*

*Education Programs in Public School Districts: 2016–17* (NCES 2018-028).

U.S. Department of Labor.(n.d.) *Pre- Apprenticeship: Pathways for Women into High Wage*

Careers.
https://www.dol.gov/sites/dolgov/files/ETA/apprenticeship/pdfs/pre_apprenticeship_guideforwomen.pdf

U.S. Equal Employment Opportunity Commission (EEOC). Retrieved on September 7, 2025

from https://www.eeoc.gov/sexual-harassment.

U.S. Office of Public Affairs. (2023, February 28). Biden-Harris Administration Launches First

CHIPS for America Funding Opportunity . *Biden-Harris Administration Launches First CHIPS for America Funding Opportunity | U.S. Department of Commerce*. Retrieved August 31, 2025, from https://www.commerce.gov/news/press-releases/2023/02/biden-harris-administration-launches-first-chips-america-funding.

Verhovek, K. (2025). "The 19th Ammendment, Explained". Brennon Center for Justice.

https://www.brennancenter.org/our-work/research-reports/19th-amendment-explained#:~:text=When%20was%20the%2019th%20Amendment,would%20take%20several%20more%20decades.

Voeller, J. (2022). Exploring the opportunities, challenges, and strategies for implementing degree apprenticeships: Perceptions of stakeholders at a Community College. *Career and Technical Education Research*, *47*(1), 39–54. https://doi.org/10.5328/cter47.1.39

Wagner, H. E., & Kulwiec, A. (2020). Expanding Pre-apprenticeship Training Programs as a Model to Improve Recruitment and Retention of Building Construction Tradeswomen. *International Journal of Construction Education and Research*, *18*(1), 3–16. https://doi.org/10.1080/15578771.2020.1808547

Washington Construction Center of Excellence (2025). https://www.constructioncenterofexcellence.com/

Walton, D & Gardiner, K.N. (2022). ABT Associates.

Washington Department of Labor and Industries. (2024). *Registered Apprenticeship Application Report*. https://lni.wa.gov/agency/_docs/2024RegisteredApprenticeshipApplicationReport.pdf

Ryökkynen, S. Raija P. & Elina Kontu. (2019). ”Interaction between students and class teachers in vocational education and training: ‘Safety distance is needed’. *Nordic Journal of Vocational Education and Training*.

Wilson, S. (2008). *Research is ceremony: Indigenous Research Methods*. Fernwood Pub.

Wheatley, M.J., & Kellner-Rogers, M. (1998). *The community of the future*. *The paradox and*

*promise of community*. Jossey-Bass.

Women of Trades Facebook Page. (2025). https://www.facebook.com/groups/131830130819736/

Wutich, A., Beresford, M., & Bernard, H. R. (2024). "Sample Sizes for 10 Types of Qualitative Data Analysis: An Integrative Review, Empirical Guidance, and Next Steps". *International Journal of Qualitative Methods*, *23*. https://doi.org/10.1177/16094069241296206 (Original work published 2024)

Zamudio, M., Russell, C., Rios, F. A., & Bridgeman, J. L. (2011). *Critical race theory matters: Education and ideology*. Routledge.

Zinn, H. (2003). *A people's history of the United States: 1492-present*. HarperCollins.

Zinn, B. Tenberg, R. Pittich, D. (2021). "What Makes a Good Teacher in Vocational Education? Students Talk Back". *Journal of Technical Education*.

## Appendix A

The following message is an invitation posted to the "Women in Trades" Facebook group on April 3rd, 2026:

Hello Folks!

Are there any trades teachers in this group? I teach in a carpentry pre-apprentice program and I am also a student in grad school.

For my research project, I am interviewing other women/NB folks teaching in trades to see how others are pushing against sexism in the greater construction industries through their teaching, or if they are at all.

Please let me know if you teach and would like to have this discussion!

My email is Gcorrin@UW.edu

Please pass it along to any teachers you know!