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# Conflicts in the workplace: experiences of practicing engineers in their first year of work

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## Abstract

Research on the school-to-work transition highlights teamwork, including conflict management, as one of the most significant challenges new engineers face. Poorly managed conflict at work can negatively impact health and well-being, disrupt team performance, increase turnover, and more [1], [2]. Research on how new engineers experience and manage conflict at work is narrow, limiting our knowledge on how to best prepare engineers with these critical skills. To address that gap, we draw on data from a multi-institutional study tracking graduates' challenges in the transition to professional practice to explore new engineers' early workplace experiences with conflict and ask:

RQ: What are common types of conflicts new engineers experience in their first year of work?

This case study uses secondary data analysis to examine how new engineers navigate conflict during their first year of work. We draw on semi-structured interviews with 50 mechanical engineering graduates across four diverse U.S. institutions after three, six and 12-months at their new jobs. Data analysis entailed inductive-deductive coding [3] to identity themes of common types of conflict, and types of conflict (task, relationship, and process [4]) as an a priori framework, in addition to identification of conflict level.

Findings underscore the diverse and complex nature of workplace conflicts for engineers compared to the predominantly intragroup conflict faced by students [5]. While conflicts related to design decisions, personality differences, and miscommunications are common in both academic teams and the workplace, additional issues salient for new engineers involve intergroup conflicts, organizational-level issues, and conflicts related to identity, power dynamics, and status. Relationship conflicts arose from interpersonal interactions including competitive co-workers, withholding of information, and extended beyond personality clashes related to gender and identity including stereotyping and overt sexism. Both task and non-task (relationship) conflicts intensified tensions between engineering groups such as R&D and production, as well as engineers, architects, and contractors. Findings further detail new engineers' difficulties related to workplace power dynamics and decisions to escalate issues, highlighting the critical role that supervisors and managers play in managing both intragroup and intergroup conflict. These findings suggest that preparing students for teamwork in education should extend beyond intragroup dynamics to include broader workplace realities, such as cross-functional collaboration and conflict mediation involving leadership.

## Introduction: Conflict in the workplace

Capstone design courses represent the culmination of undergraduate engineering education and are intended to support students' readiness for professional practice. These courses are structured to simulate authentic workplace experiences where students apply both their technical knowledge and professional skills through collaboration in team-based design work. However, despite emphasis on team projects, research on the school-to-work transition highlights teamwork as one of the most significant challenges new engineers face as they enter professional practice [6], [7], [8].

Conflict, which is an inevitable aspect of teamwork, is a persistent challenge in collaborative work. The ability to manage conflict effectively is a critical component of effective teamwork and professional practice - impacting a host of outcomes. Workplace research has shown that unresolved or poorly managed conflict at work can have substantial negative consequences, such as decreased health and well-being, reduced job satisfaction, increased burnout, disrupted team performance, and higher turnover [1], [2], [9]. In fact, "50 percent or more of voluntary resignations [in the workplace] relate directly to unresolved conflict [10]." At the same time, organizational research suggests that when conflict is managed effectively, it can support learning, innovation, and productive dialogue within teams [2], [11]. These findings highlight the importance of preparing engineers to navigate conflict early in their careers, and the consequences of poorly handled conflict can impact retention of engineers.

While conflict management (CM) is a transferable skill that can be developed in undergraduate settings and carried into the workplace, the effectiveness of such preparation and CM competencies depends on how closely educational experiences reflect the types of conflict engineers actually encounter in professional contexts. Despite increased efforts in the development of instructional strategies for teaching CM skills for student teams (e.g., [12], [13], [14], [15], there are still opportunities for improvement in aligning CM preparation with workplace realities. Prior work on engineering workplace professionals found that many professional skills related to teamwork and communication are learned primarily in the workplace rather than in the classroom [16], indicating gaps and potential limitations in undergraduate education. Part of the difficulty in the school-to-work transition stems from the substantial contextual differences between academic and professional environments. As new engineers enter the workforce, they must navigate unfamiliar organizational cultures, power structures, and interpersonal dynamics that extend beyond the scope of most team experiences in the classroom [7]. This further emphasizes the importance of understanding conflict in the engineering workplace to effectively prepare graduates.

Prior research has examined conflict in the engineering workplace broadly, with a focus on team effectiveness and CM competencies [17], [18] [19], [20]. Fewer studies have focused specifically on experiences with conflict for engineers during their early transition into professional practice [21]. We lack a clear picture of the types of conflict new engineers encounter during their first year of practice, limiting our ability to identify essential teaching and learning opportunities and align capstone education with workplace realities.

To address that gap, we draw on data from a multi-institutional study tracking graduates' transition to professional practice to examine new engineers' early workplace experiences with

conflict. We focus on the first year in the workplace, a period when graduates are still adjusting to organizational norms and roles and are likely to encounter interpersonal challenges [7], [22] to ask,

RQ: What are common types of conflicts new engineers experience in their first year of work?

Understanding how conflict manifests in engineering professional practice is critical for informing how capstone and other related courses can prepare students for the realities of the workplace.

## Conflict Typology

Our study is grounded in organizational conflict theory, which conceptualizes conflict as inherent to collaborative work with a significant influence on group processes and outcomes[23]. We draw on Jehn's [4] typology of intragroup conflict, which distinguishes three types of conflict: task, relationship, and process (TRP). It is a widely used framework in organizational and team research and more recently within engineering education research [24]. Within this framework, task conflict refers to disagreements about ideas, viewpoints, or decisions related to the work itself; relationship conflict involves interpersonal tension and negative emotions such as frustration or personality clashes [25]; and process conflict concerns disagreements about how work is organized, including allocation of responsibilities, division of labor, scheduling [4].

The TRP typology has been used extensively to examine relationships between different types of conflict and group outcomes such as performance, satisfaction, and cohesion, with mixed findings regarding their positive and negative effects [26, 27]. In the context of engineering education research, task conflict has mostly been associated with positive team outcomes [28], while relationship and process conflict has been associated with more negative impacts[29, 30]. This framework offers a useful structure for characterizing conflict in professional settings while enabling comparison with prior organizational studies.

We first employ the TRP typology as a sensitizing framework rather than a fixed classification scheme. While it provides an initial structure for analysis, we remain attentive to additional forms of conflict that emerge from the data and that reflect the particular conditions of early-career engineering work. Prior research suggests that workplace conflict is shaped by factors such as competition, limited resources, hierarchy and power dynamics, leadership styles, miscommunication, unclear expectations, and social identity-related differences including gender and culture [31], [10]. These factors informed our analysis and motivated the extension of the TRP framework to better capture the experiences of new engineers.

## Methods

This qualitative case study explores new engineers' experiences in the workplace to determine common types of conflict faced by new engineers. Leveraging secondary data analysis (SDA)[32], we draw on a multi-institutional study using semi-structured interviews with 50 mechanical engineering and engineering science graduates in their first year of work. Data

analysis entailed inductive-deductive coding [3] to identity themes of common types of conflict, and use of a priori frameworks including types of conflict (task, relationship, and process [4]), and identification of conflict level.

## Participants

Our work draws on a larger multi-institutional study that sought to explore students' transition from industry-oriented capstone courses to the engineering workplace. The full study included 126 graduates from engineering programs at four geographically diverse institutions across the U.S. (public and private, with varying institutional missions and foci); three of the four sites were mechanical engineering programs, and one was a general engineering science program. Participants were recruited from capstone design courses in two successive graduating years in the late 2010s. Our subset of the original dataset included 50 participants from the first cohort of students recruited; 80% were mechanical engineering graduates, 20% were engineering science graduates, and students were roughly equally distributed across the four institutions. For our study, 46% of the 50 participants identified as women, meanwhile, 33 participants identified as White or Caucasian; 11 participants reported identities from countries located in Asia; 4 participants identified racial or ethnic affiliations typically considered underrepresented in engineering, including Hispanic, Black, as well as Middle Eastern, while 2 participants chose not to answer. Almost all participants (92%) reported having prior work experience such as an internship or co-op (details of the full study are available in [33]).

## Data Collection

Data included closed-ended and open-ended surveys as well as periodic semi-structured interviews throughout participants' first year of work after 3, 6, and 12 months at their new jobs. Participants were asked to describe their work experiences, including challenges, accomplishments, and reflections on how their capstone preparation aligned with workplace demands. The original study explored a wide range of challenges during the school-to-work transition [33]; although it did not specifically seek to understand workplace conflict, interpersonal issues emerged as a prominent challenge, with conflict recurring across participant experiences. Our study used a total of 97 semi-structured interviews with graduates in their first year of work, from the 3, 6, and 12-month intervals. Data gathered for study participants also includes gender identification, racial/ethnic identity, prior work experience, capstone project, current position role, position start date, employment sector, and company size.

## Data Analysis

We use secondary data analysis to examine new engineers' experiences with conflict during their first year of work. In a previous analysis of the semi-structured interview data, excerpts were tagged with keywords of teamwork and communication in the qualitative data analysis software MaxQDA. For this study, we analyzed 2557 total of those excerpts tagged under the broad category of *Teamwork & Communication* [33] with 1844 unique segments. We used a two-cycle coding approach, beginning with a priori codes in the first cycle, followed by pattern coding [3],

allowing us to capture the complex and multifaceted nature of conflict, balancing both existing concepts and emergent patterns.

Because the *Teamwork & Communication* category is quite broad, including not only interpersonal dynamics with co-workers and supervisors, but also client meetings, report writing, presentations, and more, we first reviewed all excerpts in the category to identify those that potentially related to conflicts, narrowing the original dataset to about 125 excerpts describing instances of conflict. We then conducted first-cycle coding along two axes:

- Since conflict can be understood at the individual, group, and between-group levels (i.e. intrapersonal, interpersonal, intragroup, and intergroup), we identified the conflict level for each excerpt: intrapersonal conflict deals with internal struggles such as roles and identity, while interpersonal conflict is broad and can include conflict between two or more individuals in personal relationships or between peers or supervisors [34]. Intragroup conflict is similar to interpersonal conflict in that it can contain conflict between two people but refers to conflict between one or more members within a group or team. Intergroup conflict refers to conflict between two or more groups or teams.
- Next, we used the TRP typology to classify the type(s) of conflict (i.e., as task, relationship, and/or process)[4]. TRP served as a sensitizing framework to guide initial coding, while allowing new codes and themes to emerge from the data.

We then developed themes based on patterns in our initial findings to identify common types of conflict engineers face in the workplace. Conflicts grouped together were considered common if more than 10% of participants reported them (of the 36 reporting conflicts) .

### Limitations

This study has several limitations related to research design and transferability. First, the use of secondary data analysis bounds the extent to which we could examine conflict in depth. Although the original dataset aligned with our goal of understanding new engineers' early workplace experiences, the interview protocol was not designed to probe for conflict, its sources, or its management processes specifically; rather, these emerged in response to questions about responsibilities, challenges, and accomplishments participants experienced. If a participant did not bring up a conflict in response to another question, the interview protocol did not probe for it. As a result, the findings may not fully capture the nuanced interpersonal and organizational dynamics underlying participants' experiences.

Second, the sample consists largely of mechanical engineering graduates from two large public research institutions; as a result, insights may be most applicable to similar institutional contexts and engineering programs. Experiences of new engineers from different types of institutions or from other engineering disciplines may differ in important ways. Finally, the dataset reflects pre-COVID workplace conditions and does not capture how remote, or hybrid work arrangements reshape conflict or interpersonal dynamics for new engineers. Despite these limitations, the study provides a foundation for future investigations into conflict and conflict management across a broader range of engineering workplaces and educational contexts.

## Findings

Findings underscore the diverse and complex nature of workplace conflicts for engineers. More than 70% of the 50 participants (a total of 36) reported conflicts, with process and relationship conflicts accounting for 85% of conflicts. There were a total of 135 conflicts reported, including 64 relationship conflicts, 53 process conflicts, and 18 task conflicts. We categorized common conflicts into nine salient themes: (1) Personality or Emotional clash, (2) Identity-based conflict, (3) Task conflict, (4) Process conflict, (5) Us vs. Them, (6) Communication breakdown, (7) Status conflict, (8) Organizational conflict, and (9) Role or Values conflict. Definitions are outlined in Table 1, along with the total number and percentage of participants (out of 36) reporting conflicts in each theme. However, since exploration of conflict itself was not a goal of the original research study, patterns in our findings may not hold at a larger scale.

**(1) Personality or Emotional clash:** These conflicts, also considered as relationship conflicts, were the most common, impacting half of participants who reported conflicts (18 of 36), and were present at all levels, including interpersonal, intragroup, and intergroup. These conflicts were largely associated with tension or negative emotions such as anger, frustration, and resentment associated with certain individuals, groups, or interpersonal interactions. Participants reported unpleasant interactions with "toxic", "condescending", and "egotistical" individuals and behaviors deemed inappropriate for the situation or task at hand. For example:

> "There's this one guy that I work with...he loves calling me out, out loud, and like, "I can't believe you did this," and it's the smallest thing. People just roll their eyes at him, and then I start to build up this frustration with him and feel like oh, next time he's going to have an issue I'm not going to help him, and I just internalize that. But I still do it anyway, but it's just not a good thing that builds up inside of me when stuff like that happens."

**(2) Process conflict:** Disagreement about how to get work done, focusing on logistics, roles, and methods. One participant described their conflict related to processes and standards, along with strategies for how to manage it:

> "I know that I've got into a couple of heated arguments with some of my coworkers about processes and standards that they try hold my team up to, and so one of the feedback that my boss told me was one to document everything, so if I have a meeting with another department to actually document it and keep track of it, so that it's not a he said, she said kind of situation. And like words aren't twisted, like there's an actual document that people can refer to and there's no back and forth about what was said. And then, on top of that he said too when I get upset about certain situations with certain people to take a step back and then take a breath, and then address it in a monotone way, so that there's no I guess .. there's no [inaudible] of like anger, that come across in an email for example."

**(3) Communication breakdown:** Conflicts related to communication breakdowns were also common, often related to differing work styles or communication styles, poor communication or lack of information-sharing related to work processes, causing inefficiencies. These conflicts were categorized as process conflicts at the interpersonal and intragroup levels. One participant described their experience with a breakdown in communication:

> "I don't know if it's just a small company thing or the management isn't great or whatever,

but there's a lot of times where I'm just not given enough information and I gotta go scratch and claw for it, and twist arms for it. Or yeah, something blindsides me and I'm like, "Why wasn't I informed of this?" So the lack of communication around is something I'm trying to push with them a little more."

**(4) Organizational conflict:** These conflicts were commonly related to disagreements about organizational rules, policies, procedures, formal guidelines or workplace culture, shared values, or expectations. Some organizational conflicts centered around a cultural mentality of "this is how it's always been done" - leading to disagreement and frustration for new engineers. Participants shared their experiences with workplace policies and differing expectations:

"When the market is good, you're fine. You can take vacations when you want, you can keep your trips planned, whatever. But as soon as the market comes down, all of sudden they're telling you, that you're going to take your vacation for a whole, like week at one time. That has not sat well with me... I used to have a manager, he was willing to work with me because he understood that I had only been there for a year. But now I have a new manager with the reorganization and everything. He basically is like, no, we're going to follow the policies of the plant. I kind of like gave up vacation that... for trips I had already planned, and it just... it hasn't been a very good experience so far."

**(5) Task conflict:** Disagreements about the content and outcomes of a task, or the work itself, such as disputes over goals, strategies, resource allocation, or procedures. Some conflicts were more generalized, as one participant describes the negative outcomes of task conflict:

"Something similar is that no matter what you do, you always get in a conflict with another person, or other people. It's really hard to come into a consensus of what needs to happen, and even if everyone did agree, then somebody's not really happy about it, and really won't work well with you."

**(6) Us vs. them:** These intergroup conflicts involved tensions between engineering groups such as R&D and production, as well as engineers, architects, and contractors. These were not just limited to relationship conflicts with frustration or aggression between groups, but also involved task and process conflicts, with disagreements about design decisions and outcomes. One participant described their interaction with an architect at their company:

"We have to respond, "Yes we will do this." Or we have to be very polite in a way instead of saying like, I had an architect basically call me on the phone saying "Do you think I'm stupid." And I'm like "No I don't, but I'm telling you by code this is what has to be done." And he wasn't understanding me whatsoever, and he was yelling at me on the phone, and I'm like "I can show you coders where it references this, that's all I can tell you. I'm not saying you're stupid I'm referring to code and that's how we are going to design." That happened this week, so we just have to be very polite and we sometimes we will lead towards what they say, but if it goes against code then we will not."

**(7) Status conflict:** Common issues arose from intragroup conflicts including both process and relationship conflict with competitive co-workers, withholding of information, and unclear or overlapping roles; highlighting problematic behaviors related to power struggles over social standing, respect, and hierarchy within a group. For example:

**Table 1:** Common types of conflict in the engineering workplace

| Theme | Totals (%) | Conflict Type | Definitions |
|---|---|---|---|
| Personality or Emotional clash | 18 (50%) | Relationship | Relationship conflicts arising from tension or negative emotions such as anger, frustration, or resentment associated with interpersonal interactions. |
| Process conflict | 15 (42%) | Process | Disagreements about how to get work done, focusing on logistics, roles, and methods. |
| Communication breakdown | 9 (25%) | Process | Conflicts caused by poor communication or miscommunication, sometimes attributed to communication styles (tone, misunderstanding), or overlapping roles. |
| Organizational conflict | 8 (22%) | Relationship, process | Conflicts that arise from disagreements about organizational rules, policies, procedures, formal guidelines or workplace culture, shared values, or expectations. |
| Task conflict | 7 (19%) | Task | Disagreements about the content and outcomes of a task or the work itself, such as disputes over goals and design decisions. |
| Us vs. Them | 7 (19%) | Relationship, task, process | Conflicts between different groups or task interdependent teams or departments, often involving differences in goals or group-level tensions (intergroup conflict). |
| Status conflict | 6 (17%) | Relationship, process | Involves personal clashes, competition, or power struggles over social standing, respect, and hierarchy within a group. |
| Role or Values conflict | 6 (17%) | Relationship, process | Disagreements between personal values or beliefs and demands of the role, conflicting demands from multiple roles, or a clash between differing core principles, ethics, or beliefs. |
| Identity-based conflict | 5 (14%) | Relationship | Interpersonal tension, disagreement or mistreatment that arises from perceptions, assumptions, or stereotypes about a person's social identity (e.g., race, gender, age, ethnicity, nationality, profession, or cultural background). May also involve discriminatory attitudes, biased treatment, or inappropriate language/behavior that negatively affect interpersonal relationships. |

> "There is one guy in my group who I'm pretty positive he preferentially withholds information from me because it gives him a chance to have a leg up in the next meeting and look good for going above and beyond what he was supposed to do. But, really, it's like something he should have shared with me because I had time to work on it..."

**(8) Role or Values conflict:** These conflicts involved disagreement between personal values/beliefs and demands of the role, conflicting demands from multiple roles, or a clash between differing core principles, ethics, or beliefs. For example:

> "I've been struggling with it, like it's very conflicting for me at first because... There was multiple things I wanted to do just from an emotional standpoint. Like, I wanted to just ask him, I was like, "Well, I'm going to make him look stupid because he made me look stupid." Like, .. I feel like ... It came to working harder and I almost wanted to go out of my way to complete ... Basically, he and I are supposed to be working on, but like ... he ... not sharing with me anymore. I wanted to go out of my way to make a point of getting that done. And, not sharing the results with him. But, I realized that's not the right thing to do."

**(9) Identity-based conflict:** Identity-based conflicts move beyond the personality or emotional clashes inherent to relationship conflicts. These interpersonal conflicts involved judgments on ability, inappropriate behaviors, tensions or disagreements, and even overt sexism and harassment arising from perceptions, assumptions, or stereotypes based on social identity, i.e. gender, age, appearance, ethnicity, etc. These conflicts exclusively impacted only women in our participant sample. Most of these conflicts were gender-based, but a handful were also based on race/ethnicity or age. For example, one participant described their negative experience related to their identity as a young woman, resulting in seeking help from their supervisor:

> "Unfortunately because I'm one of the younger...employees and also a female, a lot of people don't take my requests very seriously. So, for example, we kept getting customer products that our team is supposed to use for our applications and they would just randomly disappear without anyone knowing. So, I would put up signs saying don't touch it and they would still disappear. Then I would talk to people or send out emails and people would kind of like brush me aside. So, since I don't have that power to enforce that I would always lean on my boss and my executive just so that they can communicate it and it just gets frustrating at a point where you have to rely on other people to have your concerns be taken seriously."

## Discussion

Our findings highlight how new engineers experience conflict in the workplace and, importantly, we consider how they compare to conflicts commonly encountered in student design teams. Understanding gaps and differences between these two contexts allows us to consider how engineering programs can prepare students with the CM skills needed for the workplace.

In student design teams, conflicts are commonly related to ideas exchange, design decisions, workload imbalances, working styles, skillsets, personality differences, and miscommunications [5], [35]. In capstone design courses, task conflicts related to engineering design [36] and process conflicts related to workload allocation and project management are particularly prominent [37].

Although relationship conflicts are not reported as frequently in team conflict literature, students, especially women and underrepresented minorities in engineering, experience identity-based conflicts related to exclusion, stereotyping, sexism, and racism [38, 39]. These forms of conflict were also present in our workplace data. While issues such as task conflict (design decisions), personality clashes, stereotyping, and miscommunications were prominent, new engineers encountered additional layers of conflict not typically experienced in student teams. Workplace conflicts extended to organizational-level issues, intergroup "us vs them" conflict, interpersonal conflicts related to identity, power dynamics, and status, as well as intrapersonal struggles when negotiating personal identity and values related to workplace roles.

Many of these broader issues are already well-known and documented in prior engineering workplace research. Intergroup conflict [18], for example, frequently emerges when engineers collaborate across disciplinary boundaries such as with business or marketing teams, where personality and cultural differences lead to dysfunctional interactions and fuel stereotypes, such as marketers claiming engineers are "rigid, stifle creativity, don't compromise, and don't understand the business" [40], [41]. Additionally, engineering workplace culture has long been critiqued as being masculine, discriminatory [42] and exclusionary, particularly toward women and marginalized groups [43], [44], [45]. Workplace studies point to a culture characterized as distrustful or openly hostile towards women [46], [47], [48]. Our findings echo these issues, with women experiencing identity-based conflicts related to stereotyping and overt sexism.

Together, these findings highlight larger cultural issues in engineering and the workplace that can negatively impact sense of belonging [49] and retention in engineering, especially for women [50]. They also point to the need for strong interpersonal and CM skills as engineers enter interdisciplinary environments. Although educators and researchers cannot directly reshape workplace culture, we can equip students with knowledge and realistic expectations of the conflicts they may face, strategies for navigating difficult interpersonal and intergroup dynamics, and the skills needed to contribute to long-term cultural change in engineering.

## Implications and Conclusion

Preparing engineering students for the complexity of workplace conflict requires moving beyond general advice toward intentional, practical, and research-informed strategies. Although prior work highlights broad capabilities for managing conflict in the workplace such as effectively communicating, identifying personality types and conflict types, seeking guidance and support, controlling emotions, and maintaining confidence and professionalism [21], our findings suggest the need for more targeted preparation for students. Intentional training beyond general CM skills development in managing differences across diverse groups, navigating organizational cultures, and collaborating across disciplinary boundaries are especially critical.

Our findings have direct implications for educational practice, especially in capstone design courses, which, aside from internships, are often students' closest exposure to professional engineering work. While educators cannot change the conditions of future workplaces, they can better prepare new engineers to anticipate and respond to conflict when it arises. This preparation involves expanding beyond conflict management within academic teams to address the realities of workplace conflict more explicitly. Although workshops and structured training modules on CM

have already seen increased attention in engineering, [13, 51, 15], educators can further strengthen these efforts by explicitly centering workplace conflict.

Engineering education often relies on real team conflict as a learning mechanism. While actual team conflicts can serve as valuable teachable moments, some conflicts exceed what students should be expected to navigate independently. Instructors should be aware of potential inequities and harm caused by conflict in teams and choose appropriate strategies, ensuring that learning experiences surrounding conflicts are educational rather than harmful. Providing opportunities for students to learn about conflict and practice strategies in low-stakes environments, such as through scenario-based learning [14] or research-informed case studies, can help students develop confidence and competence before encountering high-stakes situations in professional settings. Based on our findings, targeted instruction could include attention to the following aspects of workplace conflict:

- **Hierarchy and competition:** While students may recognize that workplaces differ from academic settings in terms of hierarchy, competition, and stakes [37], these differences are difficult to fully simulate in educational contexts. Unlike academic team projects, where grades are often shared, workplace evaluations, promotions, and advancement are typically individualized. Capstone practices such as individual performance evaluations or professional portfolios may help students begin to grapple with these dynamics, but explicit discussion of how hierarchy and competition shape conflict is also needed.
- **Microaggressions and discriminatory behavior:** Our findings highlight the importance of preparing students to recognize and respond to identity-based conflicts, including microaggressions and discriminatory behavior. Addressing these topics directly can help students develop strategies for navigating harmful interactions while also fostering more inclusive professional cultures.
- **Cross-functional collaboration:** Many workplace conflicts arise in cross-functional or interdisciplinary contexts. Team experiences that span disciplinary boundaries such as interdisciplinary capstone can provide more authentic opportunities for students to practice navigating differences in expertise, priorities, and communication norms across groups.
- **Seeking third-party support:** New engineers frequently sought assistance from supervisors, managers, or HR personnel to address conflicts, particularly in situations involving power dynamics, high stress, task/process disagreements, or identity-based issues. Although CM outcomes were beyond the scope of this study, these findings highlight the importance of teaching students when and how to escalate conflicts appropriately, as well as the central role supervisors and managers play in conflict management. In educational settings, faculty similarly influence how students perceive and respond to conflict; however, many faculty receive limited training in mentoring teams through conflict [35]. Providing opportunities for faculty to develop confidence and skill in mentoring students through conflict may also better prepare students to feel more confident in addressing conflicts with individuals in positions of authority.

By teaching targeted conflict management skills grounded in the types of conflict engineers encounter in the workplace, educators can better equip students not only to navigate conflict effectively but also to contribute to healthier, more collaborative engineering workplaces.

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