# Towards Civility: Understanding and Confronting Harassing Behaviors through Mixed Research Approaches in Engineering Learning Settings

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*Abstract*—**This Research Work-in-Progress Paper presents a platform to understand and confront the problem of harassing behaviors that impedes the success of women and under-represented minorities in engineering. Building on the findings from the 2018 NASEM report, this mixed methods study is rooted in the theories of tokenism, gender stereotyping, and intersectionality. This paper presents the conceptual framework for this study including a three-stage mixed method design and presents initial results from phase 1 regarding prevalence estimates of harassing behaviors using the UC Civility Audit 2020. An understanding of the problem of harassing behaviors and of prevalence estimates is critical to selecting, designing, implementing, and studying interventions to tackle this threat for achieving a diverse workforce.**

**Keywords—sexual harassment, intersectionality, group-level assessment, phenomenology**

## I. INTRODUCTION

In their 2018 consensus study report [1], the National Academies of Sciences, Engineering, and Medicine (NASEM) conceptualize sexual harassment (or harassing behaviors) as gender harassment, unwanted sexual attention, and sexual coercion [1]. As the report astutely points out, harassing behaviors can not only drive targets out of STEMM (Science, Technology, Engineering, Mathematics, and Medicine) fields, but even those who persist, targets or bystanders, are negatively affected in productivity and opportunities. This report highlights recent research indicating academia is second only to the military and early data shows, within academia, engineering is second only to medicine. Sexual harassment against women of color, sexual- and gender-minority people are under-researched; hence the current knowledge base presents a partial and often inadequate picture of harassing behaviors experienced by these minority groups. Additionally, as institutions of higher education become more aware of the extent of sexually harassing behaviors experienced by undergraduate students, the need for high-quality interventions especially in the context of engineering learning settings should be studied. Follow-on work has extended bystander to upstander intervention and training [2]. Conceptualizing Harassing Behaviors

The NASEM report that is the basis for this research suggests that an accurate way of obtaining prevalence estimates using surveys is by asking questions on the behavioral experiences versus perceptions of the respondents.

Following this guideline, this research calls this wicked problem *harassing behavior* instead of sexual harassment in all references to it in the UC Civility Audit 2020 survey that was used. Slightly adapted from the NASEM report [1, pg. 2], we define harassing behavior as:

- Gender harassment: Verbal/non-verbal behaviors that convey hostility, objectification, exclusion, or second-class status about members of one gender.

- Unwanted sexual attention: Verbal or physical unwelcome sexual advances which could include assaults.

- Sexual coercion: Favorable professional or educational treatment conditioned on performing sexual acts.

### A. Need and Purpose

Sexual harassment is no longer an enigma. It has been studied now for over decades and has been primarily studied in the context of hostile work environments, discrimination because of gender, and ambient harassment amongst others [3-5]. The publication of the NASEM report has drawn attention to understanding and confronting this problem in the world of academia and especially engineering as it has been reported that it is second only to medicine. With a paucity of research regarding sexual harassment against women of color, sexual and gender-minority people, the current knowledge base presents a partial and often inadequate picture of harassing behaviors experienced by these minority groups. There is also a need to investigate prevalence estimates of harassing behaviors experienced by under graduate engineering students, specifically distinguishing between class settings and experiential learning settings.

In addition to the focus generally on harassing behavior experienced by undergraduates, this research distinguishes between class settings (which we define as "an environment in a formal learning setting (e.g., classroom, lab, field trip) with multiple students and an instructor(s) for a course taken for credit.") and experiential learning settings (e.g., co-op, study abroad, undergraduate research, service learning, etc. See Fig. 1.). For example, this study specifically considers co-op for engineering students. Participating in multiple co-op experiences is a curricular requirement for engineering majors and anecdotal evidence suggests that these experiences may present a risk-point for women engineering majors. In addition to contributing to the thin knowledge base on this topic, this study also hopes to determine and study promising

At the University of Cincinnati (UC), as part of their academic experience, a large proportion of students engage in some form of experiential learning.

- Mandatory Co-op
  - External employer, including paid research (UC does not pay your salary or wages)
  - Internal employer, including paid research (UC pays your salary or wages)
  - Experiential Explorations Program (Unpaid or Self-directed)
    - Study Abroad
    - Service Learning
    - Research
    - Career-Related Travel Semester
    - International Opportunity
    - Creative Practice
    - Entrepreneurship
    - Leadership
    - Open Source
  - Other _____
- Nonmandatory Co-op including international work experience (paid, unpaid, for course credit)
- Internship (paid, unpaid, or for course credit)
- Study abroad (paid, unpaid, or for course credit)
- Undergraduate research (paid, unpaid, or for course credit)
- Service learning (paid, unpaid, or for course credit)
- Practicum (paid, unpaid, or for course credit)
- Clinical (paid, unpaid, or for course credit)
- Student teaching (paid, unpaid, or for course credit)
- Performance art (paid, unpaid, or for course credit)
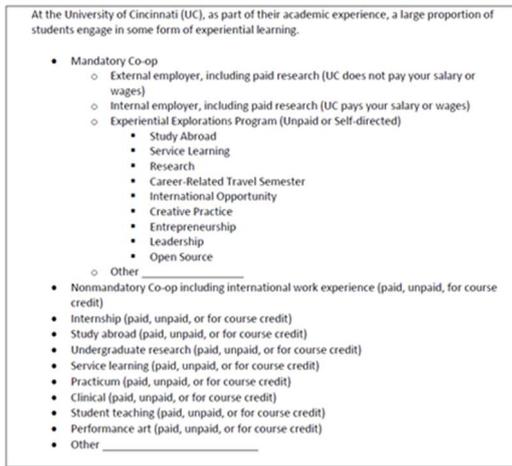- Other _____

Fig.1. Experiential learning settings

practices (programs and models) for prevention and intervention informed by the prevalence estimates. As the work on this research has just commenced with phase 1, this

experienced by undergraduate engineering students in the two learning settings. Though the workforce has an increased number of women, they are underrepresented in professional fields and as such they become "tokens" in their respective workplaces [11]. When a representation of a social group within the larger group is less than 15% then that group becomes a token in the larger context [7]. Adding to this is the uniqueness of these individuals because of their underrepresentation that puts them under scrutiny and this increased visibility becomes another salient feature of gender stereotyping [8-9, 11]. In order to study this landscape of experiences of harassing behaviors, it is important to study this in the context of the intersectionality framework as recommended by the NASEM report. The intersectionality theory [10,12] helps articulate the voices of people that experience multiple social identities and helps understand gendered experience in the context of these multiple personal and social experiences [13].

Resting on the foundations of the above frameworks, this research is undertaken in three phases. The details of the design including the planned methods for each phase is shown
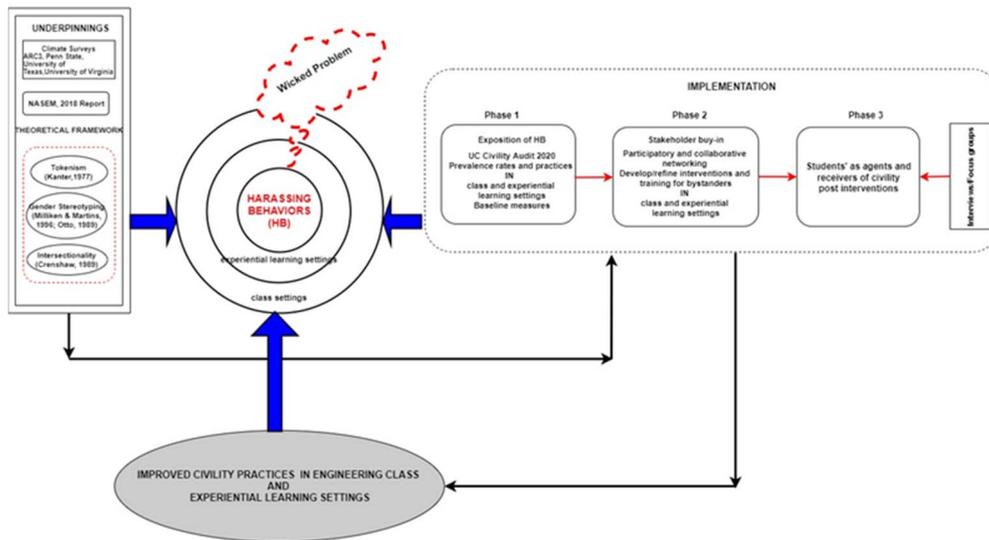


Fig. 2. Conceptual framework for harassing behaviors

paper presents the conceptual framework followed by the research design for the overall study. The sections on method and results report initial data from phase 1, student responses to the UC Civility Audit 2020 survey. The paper ends with the discussion and conclusion section.

## II. CONCEPTUAL FRAMEWORK

Fig. 2 shows the conceptual framework for this research. As stated previously, this study has its underpinnings in the 2018 NASEM report. Additionally, it uses an adapted version of the Administrator Researcher Campus Climate Collaborative (ARC3) survey [6] called the UC Civility Audit 2020. The UC Civility Audit serves as an indicator of the success of the institutional policies, procedures, services, and programs in addition to estimating prevalence of harassing behaviors that undergraduate engineering students have experienced from faculty/staff, fellow-students, and in experiential learning settings.

The theory of tokenism [7], gender stereotyping [8-9], and intersectionality [10] serve as theoretical foundations for understanding the problem of harassing behaviors

in Fig. 3 and is detailed in the following research design and research phases sections.

### A. Research Design

Mixed methods research is an emerging field that collects and analyzes data rigorously and convincingly by using multiple methods to answer the research questions [14]. It is also positing itself as a research methodology to understand complex problems through diverse approaches [15]. As such, this research employs three-stage sequential explanatory mixed methods design with qualitative priority (Fig. 3.) to: 1) assess prevalence of harassing behaviors using UC Civility Audit; 2) involving the stakeholders (faculty, staff, students, co-op sites and personnel) through a qualitative and participatory methodology of Group Level Assessment to collaboratively generate and interactively analyze data to refine and plan bystander interventions; and 3) evaluate the outcomes of these interventions through a phenomenological lens using pre- and post-interviews and focus groups to understand the essence of the experiences with greater depth and construct a comprehensive narrative.

## B. Research Phases

- Phase1: Fig. 3 shows the sequential process for this phase. This quantitative phase employs a cross-sectional survey design and collects respondent data on the UC Civility Audit. This phase commenced the first week of April 2020, immediately upon receipt of IRB approval. The goal of this phase is to validate the locally adapted ARC3 survey and look at prevalence rates of harassing behaviors by faculty, staff, and students in class settings and in experiential settings as experienced by undergraduate engineering students. This paper will focus on this phase in the methods and results section.

- Phase 2: Based on the results of the first phase, the qualitative phase 2 employs Group Level Assessment (GLA) methodology [16]. GLA is a fairly new qualitative participatory method that was modified from Reddy's Group-level team assessment [17]. Its participatory nature shifts the focus from researcher developed interventions to stakeholder developed ones based on the stakeholder identified needs and priorities. The collaborative 7 step process includes climate setting, generating, appreciating, reflecting, understanding, selecting and, action that caters to the needs of a multifaceted group of stakeholders at all levels from individual, interpersonal, organizational, and community [18]. These collectively work to inform public policy. This stakeholder-based

students have experienced in the class and experiential learning settings in terms of harassing behaviors. Their unique and painful experiences are captured through the lens of transcendental phenomenology [19]. This type of phenomenology is essential to this study as it maintains the true nature of these experiences as voiced by the survivors and witnesses of this wicked problem that has plagued academia and experiential learning settings. Additionally, it preserves the truth portrayed through their respective voices by bracketing out the prejudices, viewpoints and assumptions of the researcher through the process of "epoche" [21] and helps make objective and non-judgmental interpretation of the findings [20]. While interviews are the primary form of data collection for this approach, this study will use interviews in combination with focus groups for triangulation purposes and to capture the essence as a group and in an in-depth manner through individual interviews. Individual interviews also help participants to speak openly, freely, and safely as the topic of this study is of a sensitive nature.

## III. PHASE 1- RESEARCH QUESTIONS AND METHODS

### A. Research Questions

Phase 1 of the research is guided by the following research questions:

- What are the perceptions of undergraduate students
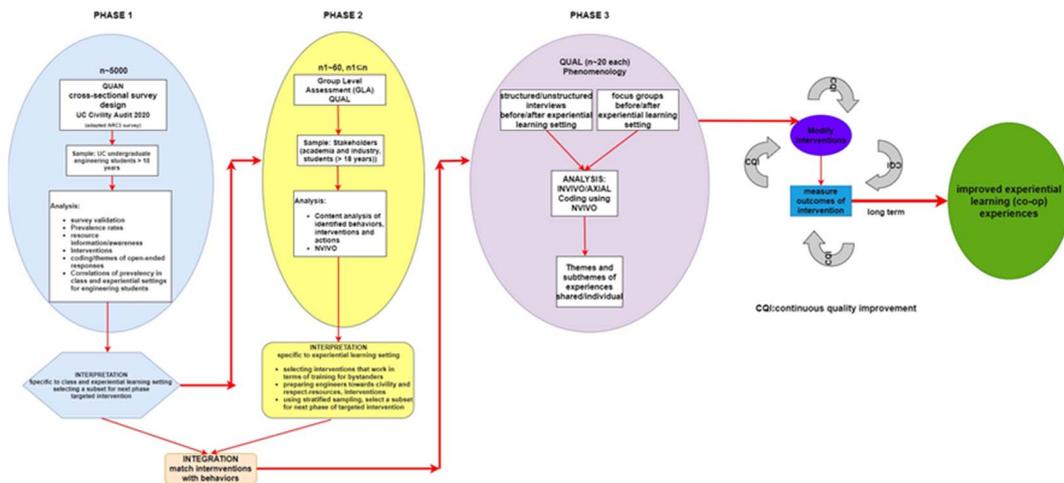


Fig. 3. Three-stage sequential mixed methods design

partnership through a collaborative and structured research method leads to appropriate actionable interventions by integrating the voices of the various stakeholders through their valued experiences.

- Phase 3: This final phase of the design uses the qualitative methodology of phenomenology to understand the experiences before and after the implementation of interventions that would be designed in phase 2. Phenomenology is one of the fundamental approaches to qualitative inquiry which explores the lived experiences of a group of individuals that share these experiences eventually culminating in an understanding of the collective essence of these experiences [19, 20]. In the context of this research study, the experiences here are what undergraduate

regarding harassing behaviors as exhibited by faculty/staff/students in class learning settings?
- How knowledgeable are undergraduate students about resources/information/education at the university related to harassing behavior?
- What are the experiences of undergraduate engineering students with harassing behaviors in university-sponsored out-of-class experiential learning settings?
- What are the experiences of undergraduate students with institutional responses to harassing behaviors?
- What are the experiences of undergraduate students with peers' responses to hearing about harassing behaviors?

- What bystander/upstander responses have students employed?

### B. Methods

The UC Civility Audit was sent to undergraduate engineering students the first week of April, 2020 at a Midwestern public university after Institutional Review Board approval. The survey was sent via Qualtrics and because of the COVID-19 changes, it was first administered to undergraduate engineering students as they were conveniently accessible through the school of engineering. The data collection is still in its initial stages. As a result, at this point, only very early results for this phase can be reported.

## IV. EARLY PHASE 1 RESULTS

There were 112 responses recorded since the administration (6 weeks) of the UC Civility Audit. Of these, 83% were white, 9% Asian or Asian American, 8% other with 44% women and 55% men. The average age was 20 years. The sample so far has no underrepresented groups with multiple social identities as defined in the intersectionality framework. 61% of the respondents have attended mandatory co-ops through their institution. Table I only reports responses of those students who self-reported as having experienced harassing behavior of the total survey respondents in terms of the incident, perpetrator, affiliation of perpetrator, and location where the harassing behavior happened that received the most response. This was done to highlight the major findings from the ongoing data collection. The percentages with the number of responses are reported for each of the cases.

### A. Experiences with Institutional Response and Resource Awareness

In terms of general safety on campus, awareness regarding harassing behaviors, and information regarding resources, of the 112 respondents:

- 87% (97) of the respondents felt safe on the campus,
- 71% (79) of them reported to have seen posters and 82% (92) crime alerts about harassing behavior since coming to the institution,
- 55% (62) of the respondents knew where to get help and 52% (58) where to go to report harassing behaviors on campus, and
- 76% (85) of them believed that the institution would take the report seriously.

TABLE I. Harassing Behavior Prevalence Emerging Data

| INCIDENT | FACULTY/STAFF %(count) Total=48 | STUDENT %(count) Total=74 | EXPERIENTIAL LEARNING SETTING % (Count) Total=23 |
|---|---|---|---|
| Sexist or sexually offensive language, gestures or pictures | 54 (26) | 50 (37) | 65 (15) |
| Perpetrator-man | 79 (38) | 64 (47) | 96 (22) |
| Affiliation | Faculty 63 (30) | undergraduate student 78 (58) | Colleague/co-worker 57 (13) Manager/senior management 22 (5) |
| Location-Onsite | 88 (42) | 66 (49) | 87 (20) |
| Reaction/Response | 44 (21) ignored 42 (20) treated it as a joke | 49 (36) ignored 20 (15) treated it as a joke | 39 (9) ignored 26 (6) treated it as a joke |

### B. Bystander Intervention Responses and Experiences

Of the 112 respondents, 32 of them have sometimes spoken up against sexist jokes, 24 have sometimes asked someone who looks upset at a party if they were okay, and 30 of them have sometimes walked a friend who was too drunk home. Some of the respondents who experienced harassing behaviors did not continue at their experiential learning settings as seen from the following response,

"*I only worked there for one semester, applied for an exemption to leave early*". Another respondent experienced offensive language, "*especially in construction, engineering, and more dominated fields, women have to deal with more degrading comments*".

Another engineering student said, "I am an engineering student, was treated like a secretary because I am female. Did not return to employer". One of the female students experienced the harassing behavior from the other male students in class, "*just generally not taking my input seriously on class projects because I was one of the few women in the class*". In terms of experiencing harassing behavior from faculty, one student responded, "*In class, only three female students. We were all put in the same group because he didn't want to stress us with having to communicate with the male students. Our group also got most of the broken or older equipment.*"

## V. DISCUSSION AND CONCLUSION

As mentioned in the NASEM report, confronting the problem of harassing behavior requires a radical change of the culture and climate in academic institutions. It requires institutions to go beyond legal compliance by being transparent and accountable at all levels [1]. With the goal to progress towards civility, this research undertook the task of understanding harassing behaviors in not just classroom learning settings, but also beyond by estimating prevalence in experiential learning settings as well. Initial results of this research are consistent with findings of similar research conducted at other institutions [1]. Similar to gender harassment literature in workplaces [22], female undergraduate engineering students also experienced sexist and offensive language in their experiential learning settings as reported in this emerging research study at this Midwestern public institution. Additionally, they are treated differently as is explained by the frameworks of tokenism and gender harassment [7-9]. This study is also consistent with studies that report that women who experience gender harassment have greater thoughts and intentions to leave their jobs [22]. In this study from the results so far, students who experienced harassing behaviors from fellow male students either ignored or avoided their perpetrator. With six weeks of undergraduate engineering student data available, the results so far echo the need to prevent this menace. This work-in-progress research plans to accomplish this by not just using a well-validated survey but also by using the mixed methods research methodology to help provide information about the nature and development of this wicked problem and plan necessary interventions to curb this in engineering learning settings. For example, in phase 2 using GLA a resulting prompt may be, "the difference between a bystander and upstander in terms of behavior is...".

This research has important implications for engineering educators, engineering schools, students, and experiential learning sites as it uses students' voices to refine and develop

bystander interventions and training to target different types of harassing behaviors. This study applies an intersection of mixed and validated approaches, as recommended in the NASEM report, to study this complex and wicked problem at a nanoscopic level and thus also contributes to the methodology of sexual harassment literature.

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