

Navigating Academic Journeys Together: Collaborative Growth, Peer Mentorship, and Work-Life Integration

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Abstract

The transition from graduate student to faculty member often involves a steep learning curve, particularly in teaching, and often requires maintaining a healthy work-life balance. This shift is especially pronounced when one's doctoral research is rooted in technical engineering subjects, while the academic role is teaching-focused and demands a shift toward engineering education research. This paper presents a reflective, practice-based account of our experiences as two engineering educators, we, Marya Cokar, a Lecturer at Rice University in Houston, TX, and Poornima Jayasinghe, an Assistant Teaching Professor at the University of Calgary in Calgary, AB, whose paths first crossed during graduate school. Our sustained friendship and peer mentorship, beginning as study partners at the University of Calgary, evolved into a cross-institutional collaboration that has supported our personal and professional growth. Our story illustrates how enduring peer networks can foster resilience, innovation, and community within academia [1].

During graduate school, we developed habits of mutual accountability and effective time management while navigating demanding coursework. When Poornima became a mother during this period, she modeled a disciplined approach to prioritization, organization, and self-care. These early experiences shaped our shared values of perseverance and empathy, principles that later informed our teaching and mentorship philosophies [2], [3].

As we transitioned into faculty roles at different institutions, our collaboration matured from informal support to structured professional exchange. Despite geographic separation, our shared disciplinary and pedagogical values enabled a meaningful partnership centered on co-developing teaching materials, conducting mutual peer reviews, and engaging in open dialogue on teaching ethics, workload management, and classroom innovation. Regular discussions around lecture materials, assessments, and active learning strategies enhanced both our instructional quality and professional confidence. Our partnership demonstrates how informal peer networks can complement formal mentoring programs by providing psychological safety, accountability, and diverse perspectives [1].

Our collaboration also extended into research and professional development. We encouraged one another to publish pedagogical work, participate in conferences, and explore emerging technologies in engineering education. Our mutual support during maternity leaves and other life transitions led to shared reflections on effective work-life integration [2] strategies, including collaborative syllabus design, adapting courses for asynchronous delivery, and sharing modular content to facilitate smoother re-entry after leave [4], [5].

This case study contributes to the New Engineering Educators (NEE) division by showcasing how sustained peer mentorship can serve as a powerful model for faculty development, particularly for women balancing caregiving responsibilities with academic progression [2], [3]. It offers actionable insights into leveraging peer partnerships to manage workload, enhance teaching quality, and foster long-term resilience. This paper is not only an autoethnography of our shared journey but also introduces two frameworks; Reciprocal Peer Mentorship, and Work–

Life Integration, that can be used by new teaching professors entering the field of engineering education.

Background

Marya grew up in Calgary, having moved there at the age of one. Calgary became both her home and the site of her early academic formation. She completed her undergraduate and graduate studies at the University of Calgary, where she pursued chemical engineering with a minor in petroleum engineering. As an undergraduate, she participated in a sixteen-month internship in Calgary's thriving oil and gas industry, an experience that grounded her technical education in professional practice and reinforced her interest in engineering as applied, problem-driven work.

Rather than immediately returning to industry after graduation, Marya chose to pursue doctoral studies, motivated by a desire to deepen her technical training and better understand the theoretical foundations underlying engineering practice. Entering the PhD program marked a shift from structured coursework to the more ambiguous and self-directed world of research. It was during this period, as a doctoral student, that Marya met Poornima. What began as a collegial relationship within the shared space of graduate education evolved into a sustained partnership characterized by mutual support, shared accountability, and, eventually, reciprocal mentorship.

Poornima was born and raised in Sri Lanka, where she completed her undergraduate degree in Chemical and Process Engineering. With a strong academic foundation and a growing interest in environmental applications, she decided to continue her graduate studies abroad and moved to Calgary to pursue graduate studies in Chemical Engineering with a specialization in Environmental Engineering. What initially appeared to be a purely academic transition soon revealed itself as a deeply personal one.

Moving as a young graduate student meant building a life far from family, leaving behind close friends, familiar routines, and the cultural context that had shaped her identity. Poornima navigated a new climate, a different academic culture, and the realities of establishing a family away from home. One of the most unexpected challenges was learning how to study alone. Throughout her undergraduate education, she had relied on collaborative learning and studying with friends, working through problems together, and drawing reassurance from shared effort. In Calgary, that support system was suddenly absent.

Our Shared Context

We are two teaching-focused faculty members in engineering whose academic and personal lives have been intertwined for over a decade. Poornima is currently an Assistant Professor (Teaching) in engineering at the University of Calgary, where she earned her PhD in Chemical and Environmental Engineering in 2013.

Marya earned her PhD in Chemical Engineering from the same university in 2013, she then went on to work in the oil and gas sector in Calgary while holding a lecturer position at the University of Calgary, during this time in industry she obtained her professional engineering designation. As family priorities shifted she later moved south of the border due to family obligations and joined Rice University in 2015 as a lecturer in Chemical and Biomolecular Engineering, now

holding a joint appointment in the Rice Center for Engineering Leadership. After having both her children abroad with minimal family support, she ventured into the energy transition industry by co-founding a startup focused on converting carbon waste into sustainable materials. She also works part time for a small oil and gas consulting company where she works as a project manager all while holding her full-time joint faculty position at Rice University. Although we come from different corners of the world, Marya from Calgary and Poornima from Sri Lanka, our paths converged in graduate school, forging a friendship that transcended borders.

Our personal context is as significant as our academic titles. As women in STEM, we have navigated engineering academia while raising children in a field where women remain underrepresented, particularly at senior ranks. Less than one-third of full professors in engineering are women, even though women comprise a substantially larger proportion of faculty at the junior level [6]. As a result, we have often found ourselves among only a few women in our departments. We have also experienced implicit bias and societal expectations that frame caregiving, particularly motherhood, as incompatible with academic success [2]. It is against this backdrop of gendered expectations and institutional norms that our story unfolds.

Shared Doctoral Journey

Our journey together began in the doctoral program at the University of Calgary, where we both pursued PhDs in chemical engineering. We met as graduate students and quickly became study partners and confidantes. Those years were intense, marked by long days studying, late nights drafting papers, and the shared pressures of a largely male cohort. We gravitated toward one another for support, exchanging notes, practicing presentations, and studying together for our candidacy examinations. When one of us encountered a setback, whether a stalled analysis or writer's block, the other offered encouragement or a fresh perspective. This peer-to-peer support became a lifeline, and we often joked that our "unofficial co-supervision" was as critical as formal advising.

The importance of peer support became especially clear when we encountered an advanced mathematics course that was a mandatory component of our doctoral program. On paper, the course was rigorous but fair, and the instructor was supportive. However, we struggled more than expected. For Poornima in particular, the challenge was not intellectual but emotional and social. She lacked the familiar experience of studying alongside peers, thinking aloud, questioning assumptions together, and sharing small breakthroughs. At the same time, she was navigating insecurities related to language, confidence, and belonging as a young female engineering graduate in a new country.

It was during this period that we began studying together. Although our problem-solving approaches differed, those differences became a strength rather than a source of friction. We were open with one another, willing to explain our reasoning, challenge assumptions, and adapt our thinking. Over time, our collaboration extended beyond coursework into informal conversations and shared meals. Through these interactions, confidence grew, communication became easier, and what began as academic support evolved into cultural and emotional support. That semester proved formative, not only academically, but relationally, and marked the beginning of a lasting partnership.

As our doctoral journeys progressed, our bond deepened further. We prepared for candidacy examinations together, supporting one another through one of the most demanding milestones of graduate training. During this period, Poornima gave birth to her daughter, and balancing early motherhood with doctoral research was overwhelming. Marya provided steady support, offering practical advice, encouragement, and a space to share frustrations without judgment. At the same time, Marya was navigating personal transitions of her own as she began building her married life. Support became reciprocal, and our friendship matured into a form of mutual mentorship grounded in trust and shared experience.

Professional Lives as Teaching Professors

Following graduate school, we both gravitated toward teaching-focused academic careers. Poornima remained at the University of Calgary, first as a postdoctoral fellow and program manager and later as a Teaching Professor. Marya briefly entered the oil and gas industry before joining Rice University as a lecturer. Despite geographic separation, teaching became central to our professional identities, and we continued to collaborate informally.

Early on, Marya invited Poornima to guest lecture in a senior elective course, drawing on Poornima's expertise in sustainability. This experience highlighted the value of sharing expertise across institutions, a practice we continued by exchanging syllabi, assignments, and pedagogical strategies. Over time, we formed a small cross-institutional community of practice, sharing materials and ideas in the absence of formal structures that support such collaboration. As early-career faculty, we supported one another through challenges related to teaching and evaluation. When Marya experienced a shift in student evaluations, we discussed the feedback together, aware of documented gender bias in student evaluations. Through these conversations, we were able to separate constructive feedback from biased commentary and make targeted improvements to our teaching practices [7], [8].

Navigating maternity leave and early parenthood marked a pivotal period in our professional lives. Poornima became a mother during graduate school, followed by Marya a few years later. These transitions brought joy alongside anxiety about career momentum and professional perception. We supported one another by sharing teaching materials, discussing workload adjustments, and validating the challenges of returning to the classroom. Through these experiences, we came to recognize the persistence of an "ideal worker" model in academia and its disproportionate impact on women with caregiving responsibilities [4], [5]. Throughout this period, we consistently reminded one another that motherhood did not diminish our academic worth; rather, it enriched our perspectives as educators.

Frameworks

Based on our narrative, we propose two interrelated frameworks that encapsulate the key strategies and principles guiding our journey: (1) Reciprocal Mentorship, and (2) Work-Life Integration. Each framework emerges from our shared experiences and is supported by relevant literature [1], [4]. While personal in origin, we believe these frameworks have broader applicability for academics, especially women in STEM, seeking long-term success and fulfillment.

Reciprocal Mentorship

A defining feature of this mentorship relationship is its bidirectional structure, which fundamentally distinguishes it from conventional hierarchical models in which knowledge and guidance flow unidirectionally from a senior to a junior scholar. Within this framework, the roles of mentor and mentee were neither fixed nor predetermined; rather, they shifted fluidly in response to context, expertise, and evolving life circumstances, thereby creating an egalitarian relational space in which support could be both sought and extended without the encumbrance of positional hierarchy.

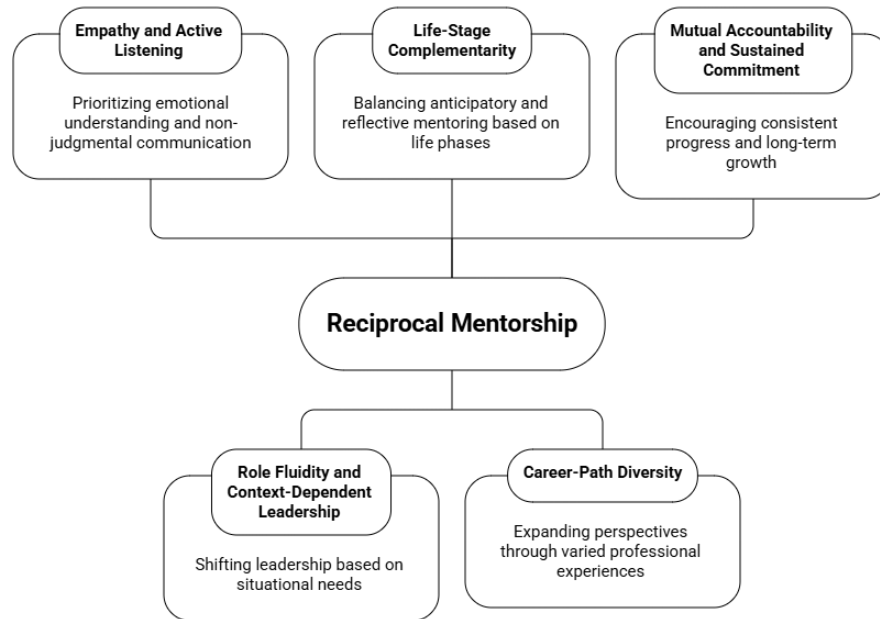


Figure 1: Reciprocal mentorship framework

This dynamic was anchored in **Empathy and Active Listening**, wherein both participants moved beyond instrumental problem-solving to prioritize the emotional dimensions of professional life, attending carefully to lived experience, unspoken constraints, and the affective labor that so often accompanies careers in engineering education. Such attentiveness cultivated the psychological safety necessary for candid engagement. Emergent from this foundation was **Role Fluidity and Context-Dependent Leadership**, through which each partner assumed a guiding function in accordance with situational demand rather than academic seniority, exchanging expertise across pedagogy, institutional navigation, research strategy, and work–life negotiation in ways that normalized vulnerability as a legitimate and generative dimension of scholarly practice.

This relational flexibility was further shaped by **Life-Stage Complementarity**, as the authors occupied meaningfully distinct phases of personal and professional development, particularly with respect to caregiving and family formation. One partner's capacity to draw on prior lived experience, while the other engaged in anticipatory planning, produced a mentorship dynamic that was simultaneously retrospective and prospective, offering continuity and reducing isolation

during consequential transitions such as pregnancy, maternity leave, and early parenting. The framework was additionally strengthened by **Career-Path Diversity**: Poornima's sustained trajectory within academia, inclusive of postdoctoral scholarship, interfaced productively with Marya's hybrid professional experience spanning both industry and academic contexts, together broadening the mentorship lens to accommodate more complex and pluralistic conversations about legitimacy, productivity, and success across institutional boundaries. Sustaining all of these elements was a practice of **Mutual Accountability and Sustained Commitment**, through which each partner actively encouraged the other to write, submit manuscripts, refine pedagogical materials, and pursue emerging professional opportunities, transforming mentorship from a series of episodic exchanges into an enduring scholarly partnership capable of supporting long-term resilience, professional agency, and growth.

Work–Life Integration

The second framework we propose is Work–Life Integration, which challenges the traditional notion of work–life balance and instead emphasizes a holistic, adaptive blending of professional and personal roles [2]. Our experiences as academics and mothers demonstrated that strict balance is often unrealistic; integration, supported by intentional choices and collective support, proved more sustainable.

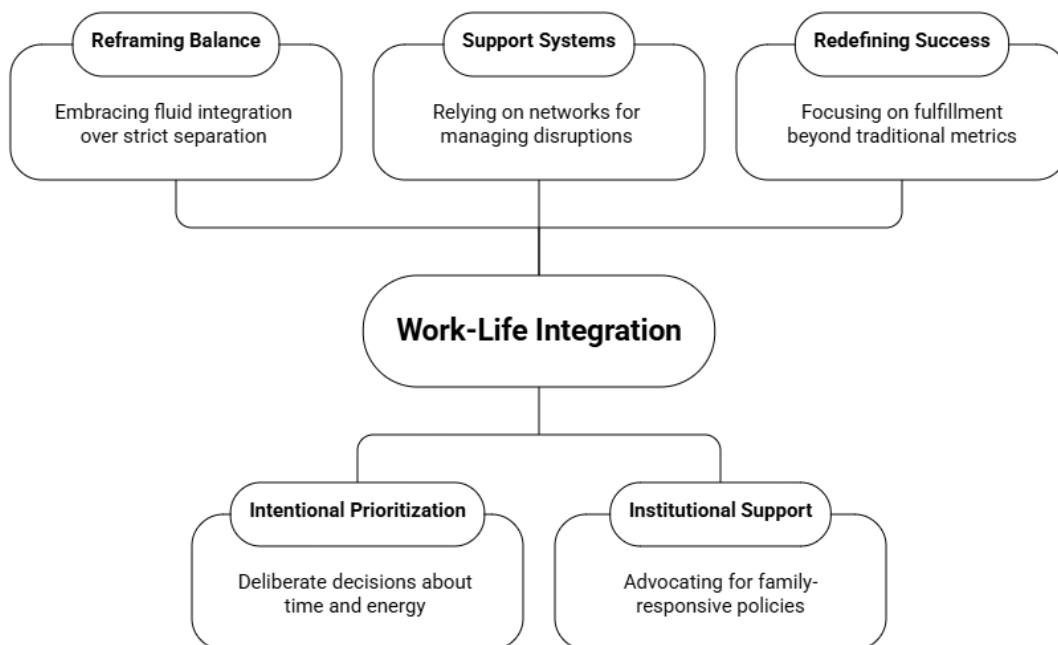


Figure 2: Work-Life Integration Framework

We start the framework with **Reframing Balance as Integration** we rejected the idea that work and life must exist as separate domains to be evenly balanced. Instead, we embraced fluid integration, allowing periods where one domain temporarily took precedence over the other. This reframing reduced frustration and enabled us to define success on our own terms, acknowledging that integration, not equilibrium, better reflects the lived realities of academic mothers.

Intentional Prioritization and Boundary Setting integration required deliberate decisions about where to invest time and energy. We continually reassessed priorities across teaching, scholarship, caregiving, and personal well-being, recognizing that not all commitments could be maximized simultaneously. Clear boundaries, such as limiting after-hours work or deferring nonessential projects, helped prevent burnout and reinforced that sustainability, not constant availability, was the goal. **Leveraging Personal and Professional Support Systems** effective integration depended on robust support networks. We relied on partners, extended family (rarely as we were both away from home), childcare systems, and one another to manage inevitable disruptions. Professionally, we sought mentors and allies who understood caregiving demands and advocated for flexibility. While these supports were critical, our experiences also underscored that caregiving responsibilities, and their career consequences, continued to fall disproportionately on us. We were **Advocating for Institutional Support**, individual strategies alone were insufficient without structural support. Our experiences motivated us to advocate for family-responsive policies such as parental leave accommodations, workload adjustments, and scheduling norms. We observed that even modest institutional changes, often driven by faculty advocacy, had meaningful impacts on retention, productivity, and well-being. And finally, we were **Redefining Success and Practicing Self-Compassion** over time, we redefined success beyond traditional academic metrics. Professional fulfillment came to include effective teaching, mentoring, and personal well-being alongside scholarly output. Self-compassion became essential as we navigated inevitable trade-offs. Rather than viewing professional and caregiving identities as competing, we came to see them as mutually reinforcing.

Together, these elements form a Work–Life Integration framework that emphasizes adaptability, support, and intentional decision-making. By moving beyond the pursuit of perfect balance, this framework offers a more realistic and humane approach to sustaining academic careers alongside caregiving responsibilities, one that benefits not only mothers, but faculty more broadly.

Conclusion

This paper presents an autoethnographic account of our shared journey as two engineering educators whose sustained peer partnership supported our professional growth, teaching development, and personal resilience across institutions and life stages. Through reflective narrative and practice-based insight, we introduced two interrelated frameworks; Peer Mentorship, and Work–Life Integration, that emerged organically from lived experience while extending existing literature on faculty development and mentoring.

Collectively, these frameworks challenge dominant academic norms that privilege individualism, linear career trajectories, and rigid notions of balance. Instead, they foreground relational labor, adaptability, and shared purpose as central to sustaining teaching-focused academic careers, particularly for women navigating caregiving responsibilities. While grounded in personal narrative, the frameworks are intentionally structured to be transferable, offering practical guidance for new teaching professors and institutions seeking to foster inclusive, humane, and resilient academic environments.

As engineering education continues to evolve, especially within teaching-intensive and nontraditional faculty roles, recognizing and legitimizing peer-based mentorship and work–life integration will be essential. By making visible the often-invisible labor of collaboration, care,

and mutual support, we contribute to ongoing efforts to broaden definitions of academic success and create pathways in which faculty can thrive both professionally and personally.

Autoethnography has gained increasing recognition as a rigorous method for connecting personal narrative to broader social and institutional structures, particularly within higher education contexts where lived experience shapes scholarly identity in ways that conventional research designs often fail to capture [9].

Through reflective narrative and practice-based insight, we introduce two interrelated frameworks; Reciprocal Mentorship and Work–Life Integration, that emerged organically from our lived experience while extending existing scholarship on faculty development and mentoring in engineering education [10]. Collectively, these frameworks challenge dominant academic norms that privilege individualism, linear career trajectories, and rigid conceptions of professional balance. In their place, our frameworks foreground reciprocity, adaptability, and shared purpose as foundational to sustaining teaching-focused academic careers, particularly for women navigating caregiving responsibilities in environments that continue to structure evaluation and advancement around an idealized, unencumbered academic subject [11].

Research on peer mentorship has consistently demonstrated its capacity to enhance academic productivity, psychological well-being, and professional self-efficacy, especially among women faculty for whom traditional hierarchical mentoring models have proven insufficient [12]. While grounded in personal narrative, the frameworks developed here are intentionally structured to be transferable, offering practical guidance for early-career teaching professors and for institutions seeking to cultivate more inclusive, humane, and resilient academic environments.

References

- [1] G. Aslam and I. Villanueva Alarcón, “Lessons learned: Designing powerful questions to foster empathetic mentorship for engineering faculty through a faculty professional development workshop,” *Proceedings of the American Society for Engineering Education (ASEE) Annual Conference*, 2025.
- [2] L. G. T. Gossage, *Work–Life Balance of Tenured and Tenure-Track Women Engineering Professors*, Ph.D. dissertation, College of Education, Walden University, Minneapolis, MN, USA, 2019.
- [3] K. Mason, N. Wolfinger, and M. Goulden, *Do Babies Matter? Gender and Family in the Ivory Tower*, New Brunswick, NJ, USA: Rutgers University Press, 2013.
- [4] A. Bandura, *Social Learning Theory*, Englewood Cliffs, NJ, USA: Prentice Hall, 1977.
- [5] C. Gilligan, *In a Different Voice: Psychological Theory and Women’s Development*, Cambridge, MA, USA: Harvard University Press, 1982.
- [6] B. L. Yoder, “Engineering by the numbers,” *American Society for Engineering Education*, Washington, DC, USA, annual reports (e.g., 2017–2023).
- [7] I. M. Handley, E. R. Brown, C. A. Moss-Racusin, and J. L. Smith, “Quality of evidence revealing subtle gender biases in science is in the eye of the beholder,” *Proceedings of the National Academy of Sciences of the United States of America*, vol. 112, no. 43, pp. 13201–13206, 2015.

- [8] C. Van der Lee and N. Ellemers, "Gender contributes to personal research funding success in the Netherlands," *Proceedings of the National Academy of Sciences*, vol. 112, no. 40, pp. 12349–12353, 2015.
- [9] L. Alwazzan, "Becoming a researcher in academic medicine: An autoethnography of research faculty development," *SAGE Open*, vol. 13, no. 4, 2023.
- [10] M. Huerta, D. M. Aukes, J. M. Bekki, S. R. Brunhaver, A. R. Carberry, J. L. Holloway, G. Lichtenstein, and A. F. McKenna, "The process of conceptualizing and creating the Engineering Faculty Impact Collaborative to support faculty development and mentorship," in *Proc. ASEE Annual Conference & Exposition*, Tampa, FL, Jun. 2019.
- [11] B. J. Casad, P. Franks, C. Garasky, M. Kittleman, A. Roesler, D. Hall, and J. Petzel, "Gender inequality in academia: Problems and solutions for women faculty in STEM," *Journal of Neuroscience Research*, vol. 99, no. 1, pp. 13–23, 2020.
- [12] P. Varkey, A. Jatoi, A. Williams, J. Mayer, M. Ko, J. Files, J. Blair, and M. Hayes, "The positive impact of a facilitated peer mentoring program on academic skills of women faculty," *BMC Medical Education*, vol. 12, no. 1, p. 14, 2012.