

Reflecting on Faculty-Student Interaction and Well-Being in STEM: An Ideas Session

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Abstract—Based on the study “Faculty-Student Interaction and Impact on Well-Being in Higher Education,” this special session workshop introduces research findings on reforming curriculum and pedagogy to infuse care into teaching and learning spaces in higher education. It also addresses the need for institutional care to support faculty well-being. Participants will share experiences as faculty and students and workshop ideas for transforming curriculum, pedagogy and institutional support structures to enhance well-being for both faculty and students (*Abstract*)

Keywords—care in higher education, STEM curriculum, STEM pedagogy, well-being, faculty-student interaction, feminist pedagogy, ungrading

I. INTRODUCTION

The goal of this special session at Frontiers in Education is to help faculty apply research findings about student well-being in STEM fields to their teaching practices. As a community of educators, we are working in a system that has high demands for performance and our time. Our limits have been stretched further as we’ve gone through the Covid-19 pandemic, and cracks in our personal and systemic well-being have surfaced.

Barbieri, et al., found that close to half of young adults were at risk of clinical depression in Spring 2021, a year after the pandemic onset, even though vaccines were available and restrictions had decreased [1]. Even in pre-pandemic times, rigorous academic programs like engineering often negatively impact student well-being. Warshaw explains how competitive academic programs put “overbearing pressure” on students that leads many of them to cope in unhealthy ways [2]. Faculty have struggled both before and through the pandemic as well. *The Chronicle’s* “On the Verge of Burnout” reports that more than half of faculty are considering leaving their jobs, two thirds have increased workloads, and the majority have increased anxiety and stress [3]. This session invites a conversation about improving well-being through strengthened relationships, meaningful interaction time, and reciprocal care within programs and institutions.

When faculty and researchers consider curriculum, we often focus on the explicit content we are teaching, but this session broadens curriculum to include the interactions and interpersonal aspects of schooling. This workshop session is novel because it offers the chance to consider how time is allocated toward interpersonal relationships and how those choices influence pedagogy, curriculum, and well-being for faculty and students. The session offers an opportunity to be reflective about our learning experiences, our teaching habits, and lessons learned from adapting teaching and learning through the pandemic. We often don’t “get real” with one another in academia about our actual struggles and challenges, but this session offers that invitation as well. Now more than ever, it is important to engage in conversation with others about what we need to thrive in our personal and professional roles and provide conditions that allow students to be at their best within and beyond our classrooms.

II. RATIONALE

A. Engineering Education & Well-Being

This workshop draws on research in engineering education and care ethics and presents findings from a dissertation research project on faculty and student well-being in a STEM school. “Faculty-Student Interaction and Impact on Well-Being in Higher Education” investigated the kinds of interactions that are supportive for well-being and advocates for changes in pedagogy and curriculum to mitigate the unsupportive interactions faculty and students encounter in higher education [4]. Christe’s literature review on the importance of faculty-student interactions in STEM argues that “STEM disciplines must seek a change in academic culture away from survival of the fittest to a nurturing experience that supports achievement” [5, p. 22] I would add that outside of any measurable outcome, it is important to be aware of how academic culture influences well-being and joy. Bjorklund, et al., [6] show how faculty-student relationships and constructive feedback mechanisms support students and Campbell advocates incorporating care and empathy into engineering curricula directly [7]. Vogt’s research underscores the importance of faculty-student interaction for the

retention of engineering majors, [8] so making time to be available to students has wide-ranging impacts for their well-being.

B. Study findings

To foreground the workshop, I will summarize findings from [4] about the main research question of my study: What are the qualities of faculty-student interactions and relations that support care and well-being? In the table below, I show that faculty and students have different categories of factors that positively or negatively influence their sense of well-being. However, it was clear that interpersonal interactions between faculty and students are fulfilling and beneficial for all parties. Most faculty and students value stronger connections and relationships, but many of them report the lack of time for these interactions as well.

TABLE I. SUPPORTIVE AND UNSUPPORTIVE FOR FACULTY AND STUDENT WELL-BEING

	Theme	Representative Quotation
Faculty responses	Institutional factors	"The workload was oppressive"
	Personal factors	"There were some dark days"
	Temporal factors	"There's just not enough time"
	Interpersonal factors	"I want to know them more"
Student responses	Unsupportive faculty	"You don't have to degrade me"
	Caring faculty	"You have no idea how much it meant to me"
	Caring interactions	That really encourages a closer relationship"
	Unsupportive interactions	"Okay, I'm never gonna talk to you"

Participants in the study also revealed some of the ways they feel unsupported or uncared for within the university system. Because of the hierarchical power structures embedded in institutions, I argue that there are responsibilities for administration and governance to provide caring support for faculty and students. Faculty, for our part, can show care through our curriculum and pedagogy. An ethics of care must be present alongside any curricular reform or diversity, equity, and inclusion effort in an institution.

Figure 1 shows the Flow of Care model, intended to show the flow of care we can encourage throughout the hierarchy of institutions. The more supported a faculty member is, the more they can support their students. It is also important to acknowledge the care responsibilities that students, faculty, and administrators may have for others both on and off campus. The global experience of the pandemic called attention to a society in crisis and changed many education practices, and yet, outside of global crises are the personal crises and struggles any individual can experience at any time. We can reflect on pandemic teaching and collective empathy to build new teaching practices and curricula that are responsive to the needs of faculty and students to interact as part of the classroom experience.

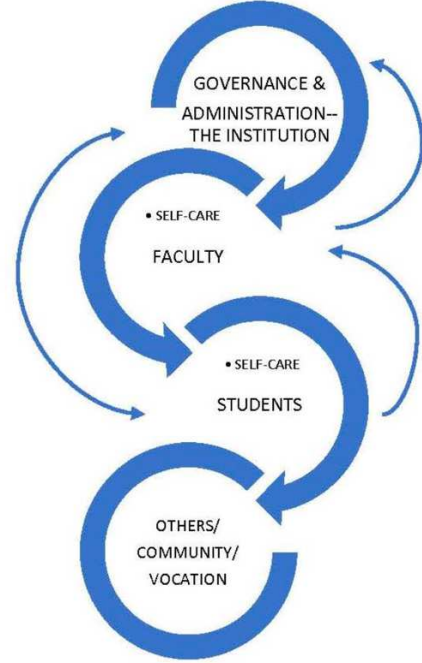


Fig. 1. The flow of care model.

III. WORKSHOP DESIGN

To engage fellow faculty in the discussion and application of these findings, my action research plan includes faculty workshops, collaborations, and webinars to continue to learn about faculty experiences and work toward curricular and pedagogical reforms that support well-being for students and faculty.

Selected quotations and examples from my study will be included in the workshop as inspiration, but the value of the interaction of the group will be a connection to participants' feelings about their teaching and current needs for support.

A. Focus on Faculty Well-Being

To begin the session, we will start with storytelling, the importance of the heart and gut of communication, and the change potential of vulnerability. My story of being a student and faculty member provides rationale for the study focus and design. Participants will reflect for 5-10 minutes on their own sense of well-being throughout their career, noting times when they have felt most at ease and times when they have been most challenged. They will describe one way they are an expert and one way they are a novice. We will post responses to these prompts on sticky notes around the room to review as a whole group. We will discuss what supports professional well-being, and what feels counterproductive or unsupportive of well-being. Finally, we will determine ways to advocate for ourselves and for our students with our administrations to garner better support for all teachers and learners.

B. Focus on Student Well-Being

For the second half of the session, we will focus on the student side of the instructional arc and I will share what makes students feel supported and unsupported by faculty. Example

student experiences with unsupportive faculty will frame the discussion of alternative pedagogies and curricular reform that would be more supportive for student well-being. I will share findings on course policies language, qualitative assessment, and ungrading movements. Then, participants will have time to think/pair/share on their ideas for applying a reform for well-being in their context. We will share alternative pedagogies we have employed to address challenges we face in interacting with our students. Groups of attendees will work together to suggest potential solutions to these challenges through pedagogical and curricular reform. We will close the session by sharing out on participants' most important action steps, from either personal or professional realms, with an eye toward influencing campus policies and administrative support structures for faculty and students.

IV. NEXT STEPS

I hope that future work as a result of the session would include faculty collaboration across institutions for better understanding and responding to student well-being in our teaching practices. I also want to engage in future work with other groups of faculty in workshops and webinars to focus on advocating for our own well-being in navigating the demands of employment in academia.

A. Authors and Affiliations

Cortney Holles is a Teaching Professor in the Humanities, Arts, and Social Sciences at Colorado School of Mines where she has taught and developed the required first-year ethics and writing course for STEM majors since 2004. She also teaches science communication and service learning. She defended her educational criticism/action research dissertation on "Faculty-Student Interaction and Impact on Well-Being in Higher Education" and earned her Ed.D in 2021. She is now engaged

in the action steps resulting from her study, continuing to interact with faculty and students about their experiences of well-being on college campuses, leading faculty workshops, and advocating for reforms that better support students and faculty as whole people.

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