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ETHICS OF CARE AND SOFT SYSTEMS METHODOLOGY EMPLOYED TO GUIDE A DOCTORAL PROGRAM REDESIGN

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For many educational organizations, ensuring students have a positive experience and feel cared for by their degree program faculty is necessary for recruitment and retention, which can be especially important in challenging doctoral programs. Making information easily accessible and up-to-date on the website, including the necessary forms, is a simple yet significant way of demonstrating support and care for students as they seek to complete important milestones such as the dissertation. Further, regular communication of expectations with care messages is vital for retention because it builds students' confidence that department members support their well-being and success. From the perspective that the organization's behaviors should be moral, it is necessary to show care for students to ensure they can complete a degree. Instructional design should follow a strong learning design theory aligned with desired outcomes. As such, our program redesign was guided by Noddings' concept of Ethics of Care, which is grounded in a feminist, moral perspective of educational support. The operational enactment of that conception was supported by soft systems methodology, which is focused on understanding and depicting the complexity of human interactions in organizations. This paper presents our attempt to completely redesign a doctoral program to support students to improve their experience by providing improved advising services and academic resources.

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All student authors were in a doctoral course in the fall of 2023 that focused on using system dynamics theories and research analysis to examine design.

INTRODUCTION

This design case presents our attempt to completely redesign a doctoral program to support students by improving their experience through improved advising services and academic resources. As graduate programs mature and evolve, it is crucial to evaluate the degree to which the operations that support them continue to serve student needs. Graduate program services involve a complex system of activities, humans, intentions, functions, and structures. Gradual changes to a program's services and processes that emerge may be responsive to short-term problems facing a graduate faculty but may negatively impact long-term program marketing and sustainability as services such as advising become less equitable (Zeca, 2017). Emergency decisions may negatively impact responsiveness to student needs regarding efficiency and effectiveness with advising, growth opportunities, availability of necessary courses, communication, and activities that provide a sense of belonging to the program (Filip, 2021). From a moral perspective grounded in justice and equity of benefits, there is a need for educational programs to make all students feel cared for and cared about, which is essential to retaining students long-term and building goodwill through authentic support. This approach should lead to positive word-of-mouth marketing and develop a sense of community that supports students from the beginning to the end of a graduate program. After several years of virtual advising due to the pandemic, the project designer found this need is especially present with doctoral programs such as the one he now directs. With the distributed doctoral program created in 2011, the designers sought to balance online and face-to-face academic community support from peer students and department faculty and staff to help students complete the degree and overcome natural transactional distance problems (Jones et al., 2014). In a large online doctoral program like ours with more than 100 active students, students require caring advising to succeed. Expressions of care may result from broader operations decisions about how advising systems are designed. These decisions may include the creation of coherent digital and staff admissions communication and follow-through on promises to show beneficence to students with equitable advising and program resource distribution, regular large-scale and individualized compassionate communication for in-program students to ensure equitable, efficient, and effective distribution of these resources as an ethical imperative for student support (Steiner-Khamsi et al., 2009).

CONTEXT

Historically, advising operations are focused on objective structures intended to accomplish tasks such as ensuring students are enrolled in the correct courses, completing paperwork for different educational milestones, and conveying information (Warren, 2018a). These are commonly viewed as business tasks for simple completion rather than in service of showing *care for* and *care about* students as part of retention and satisfaction with the educational program (Warren et al., 2023). Providing advising services across a doctoral program through faculty mentors, staff support, director communications, and other resources is not always equitable. Some students do not receive proper benefits from advising services as designed into a program for reasons including faculty mentors with excessive workload, unsteady staff support due to turnover, a lack of or improperly designed asynchronous support resources, or other impediments that arise over time as programs mature and support systems lose coherence.

The lead designer on this project (the "I" in this article) took over the supervision of a doctoral program that had been minimally updated in the past decade. Therefore, determining where problems of equitable advising and resource support occur and ensuring fairness in the distribution of benefits to all students required a significant overhaul focusing on increasing student retention and successful graduation by first understanding the root causes of the design challenges. While I had helped develop the current program in 2010-11, my involvement in the program by early 2023 was mainly doctoral dissertation advising until starting program supervision at that time. Therefore, the current state of the system of advising, resources, and its success were largely unknown beyond his own students' experiences. This design case is focused on presenting specifications for the changes and evaluating components used to determine whether they met the needs antecedent to the project's development. The design, evaluation framework, and related outcomes are included in this case to provide a systems view of the approach to embedding ethics of care into the structure of the program and the degree to which the changes meet desired outcomes.

Program Description

When originally designed, our doctoral program was divided into *residential* and *distributed* delivery modes (Jones et al., 2014), with the latter requiring a fall residency meeting to meet Texas' face-to-face contact hours requirement over four or five years. As originally conceived by the department, the fall residency meeting is meant to connect students to the program's faculty, peer students, and staff to build a sense of belonging at the university and ensure students know how to access advising and other needed departmental resources. The meeting also ensures we meet state face-to-face

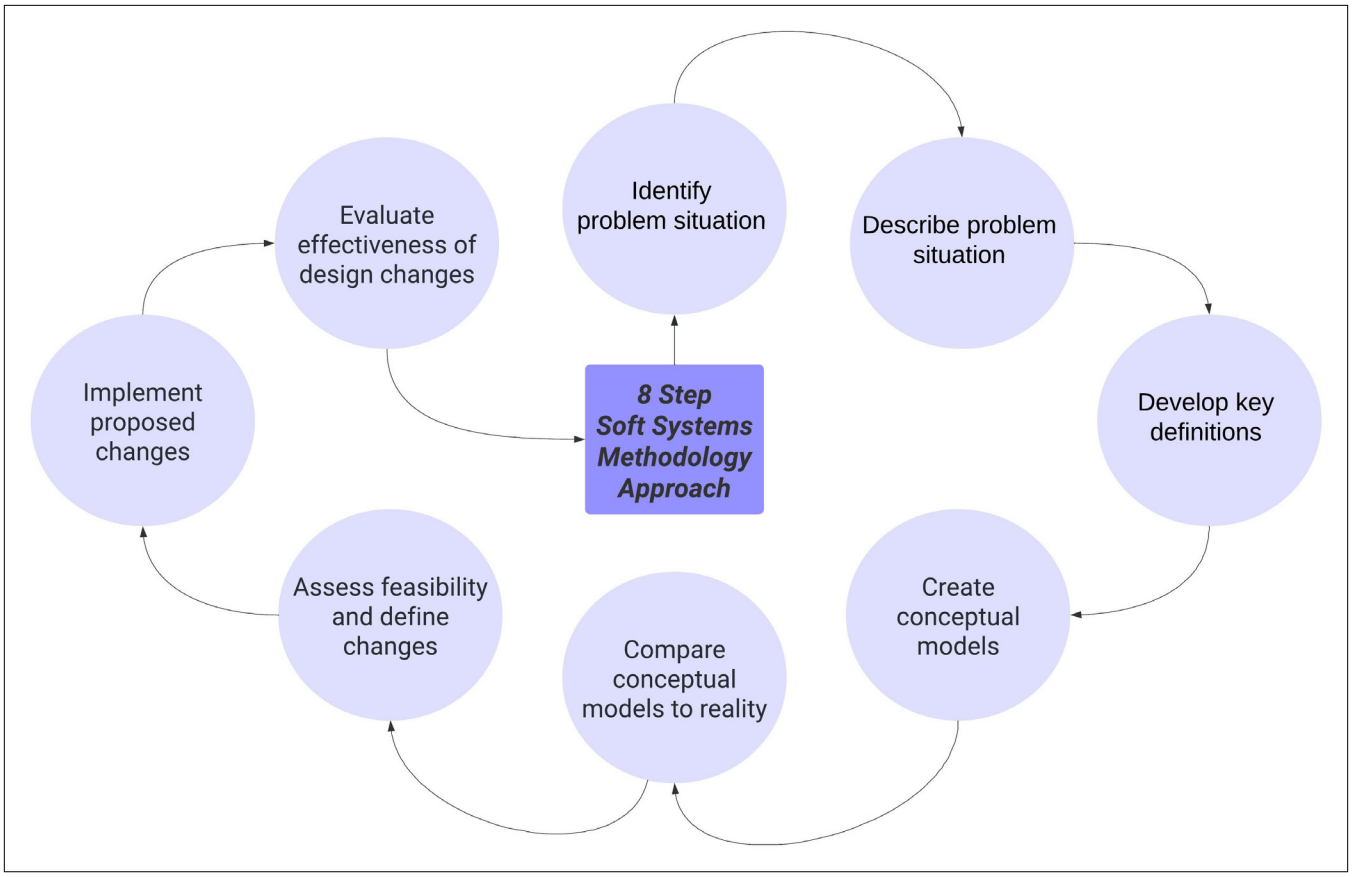

FIGURE 1. 8-step soft systems approach (adapted from Warren, 2018b).

contact hours with students (i.e., 160 total) during the program.

As with many online programs, the transactional distance students face between their program faculty and themselves creates tensions between the groups, leading to difficulties in providing equitable services (Boling et al., 2012). Ours is no different. Such distance negatively impacts retention rates and student perceptions of some online programs (Kang & Im, 2013; MacLeod et al., 2019).

To address this issue, the program provides students with a mentor called an Associate Graduate Faculty member, with whom they meet at least once a month to provide

academic and emotional support. In addition, students take mostly the same courses at the same time and meet regularly with one another in a cohort, which is meant to provide an additional sense of co-presence. These features were included to reduce the sense of transactional distance and help students support each other in cases when their faculty and assigned advisors are unavailable. Peer-to-peer interaction is a partial solution when resources and services are not well-distributed. In restructuring the doctoral program, the designer sought to make decisions meant to show care for our students as part of supporting the provision of fair and equitable advising and other departmental resources needed for success. Further, a major goal was to offer students opportunities to network and build critical collaborative bonds to overcome natural tensions created by the transactional distance present in online programs.

Design Challenge

Resource allocation ethics challenges

We are redesigning educational systems to ensure equitable and just resource provision decision-making in academic settings in its early stages globally, with work conducted internationally and generally lagging in the academy (Popadiuk et al., 2014; Steiner-Khamsi et al., 2009; Uhlenbruck et al., 2003; Willis et al., 2019). In organizational behavior theory, the resource-based view of institutions generally explains ensuring the proper provision of resources. This framework explains the importance of distributing different scarce resources for different purposes to help an institution perform better (Popadiuk et al., 2014; Wernerfelt, 1984). The most recent work to develop an ethics framework for equitable educational resource allocation focused on K-12 schools (Omoeva et al., 2019) rather than higher education programs and resources such as advising support, which is the focus of this project redesign. In our program, the distribution of advising resources needed to support students has become

unbalanced over the last decade, with some students receiving more and better quality advising than others.

Virtual disconnect

During the COVID-19 pandemic, our fall doctoral residency meeting was held virtually to protect students, and 2023 marked the return to an in-person event. This meant that students in 2020, 2021, and 2022 had no chance to meet face-to-face with their peers or professors, creating a greater distance that was difficult to overcome. While some solutions, such as email, class meetings, and periodic advising sessions, were offered, they were provided unevenly and inequitably across the student body, depending on their advisor. Student retention dropped significantly compared to the years preceding the pandemic. Through surveys and meetings with mentors, students reported feeling disconnected from the program and professors, harming their motivation to complete the degree.

Further, some students reported being upset that some received significantly better and more consistent advising than they did, allowing them to complete the degree more efficiently because of support from their major professor. For the program's sustainability, design changes to educational support practices, equitable educational resource provision, and supportive systems were needed to make it more responsive and effective at meeting all students' needs. An important design goal was to shift students' perceptions of the program by providing positive informational messaging, streamlined operations, documentation, and opportunities for support that helped them feel cared for and about. To help ensure the program's beneficence, equitable advising services, support resource allocation (e.g., travel funds), and to foster student retention, the program director chose the Ethics of Care lens for a redesign because of its focus on supporting students pedagogically and emotionally by making caring decisions to ensure students feel supported and receive equitable advising and academic resources.

DESIGN APPROACH

Ethics of Care

The Ethics of Care lens guided design decisions to help ground each in a coherent ethical framework. This view was chosen because a major goal of the redesign was to show students that the doctoral program and its faculty care about them. Noddings (2003) introduced the concept of Ethics of Care (also known as Care Theory) to develop pedagogy and communications responsive to student needs. Care Theory evolved from the feminist conceptual framing of pedagogy and design, which seeks to show students they are *cared for* and *cared about* as part of a shared community that values each member and their contributions show beneficence and seeks equity of student support through the pedagogical and systemic design of the educational experience. From that perspective, decision-making about the structure of a program shows respect for and is designed to accommodate the unique needs, challenges, and knowledge of learning community participants to foster their success (Moore & Tilberg-Webb, 2023). I learned about Ethics of Care in graduate school, and it was incorporated into my student's dissertation research and instructional design application (Robinson et al., 2017), making it a comfortable lens for embedding ethical aspects into design.

By creating structures of communication and curriculum that recognize the stress and demands of students' lives as part of supporting the ethics principle of beneficence (Dawson et al., 2020), programs should do so through caring communications that assess and seek to meet student needs (Warren & Bonhamgregory, 2019a). Furthermore, communications about program expectations should be conducted in a manner that is regular and clear, inviting learners to participate in class activities and outside enrichment opportunities in a way that acknowledges student constraints stemming from personal lives (e.g., family), work demands, and individual differences in available time to be part of the academic community. From our perspectives, as part of the ethical principle of beneficence, graduate programs should be designed to show care about student well-being and support long-term success from the time before students enroll and throughout their coursework. When students become alumni, they can be encouraged to continue participating in a department's academic community as colleagues (Warren et al., 2023).

Soft Systems Methodology

Because ethics is conceptual and program redesign requires pragmatic decision-making to build it, we employed soft systems methodology (SSM). Because of its ability to help researchers and developers describe and respond to complex situations in systems, it could operationalize the ethics aspects into practice (Warren & Bonhamgregory, 2019b; Boardman & Sauser, 2008). My goal was to re-engineer the program's services and structures to support instructional functions and outcomes through the lens of Noddings' (2003) Ethics of Care framework to guide the moral components, with SSM to ensure our designed systems equitably distribute resources, are beneficent, and prioritize those in need (Dawson et al., 2020) as part of showing care in our actions.

Before starting the project, I developed expertise with the SSM project engineering approach during business school doctoral work and research. This experience provided a structure for managing this systemic redesign change project that other instructional design methods cannot. SSM originated in industrial organizational systems psychology (Mingers, 1980) and system dynamics (Forrester, 2007). It is now linked to advanced design rooted in systems thinking

(D. Meadows, 2018; Šviráková & Bianchi, 2018) and design thinking (C. Meadows & Parikh, 2022; Šviráková & Bianchi, 2018). SSM provides robust visualization and explanatory outcomes in the analysis and redesign phases, making it easier to share with stakeholders during decision-making discussions.

SYSTEM ANALYSIS: CURRENT STATE

To determine what changes needed to be made to the program, I employed an eight-step SSM process (Warren, 2018b) that was modified for redesign with existing systems (see Figure 1):

1. Identify the problem situation
2. Describe the problem situation
3. Develop key definitions
4. Create conceptual models
5. Compare conceptual models to reality
6. Assess feasibility and define changes
7. Take action to implement proposed changes
8. Evaluate the effectiveness of design changes

Because ethical development is transparent, we report the analysis process and outcomes that led to this design case's current and planned design changes. Further, we describe a validated instrument used to evaluate whether the redesign resulted in positive student feelings of being cared for or cared about by our program's staff and faculty.

Steps 1 and 2: Identify and Describe the Problem Situation

As I entered a situation about which little was known, locating information about the program's current state was the first data collection point for analysis. This approach sought to understand better the program's reporting, advising, structures, functions, information systems, resources, and design intentions. Exploration of available data resulted in a written description of the problematic aspects of the current educational system. Several problems with the data itself were detected that made determining what was needed for the redesign challenging:

- Of the 149 students listed at the outset, only 102 were active in the program
- 23 students listed had graduated
- Ten students listed as active had left the program or not started, but we were unaware
- Six students were on leave of absence
- 11 students had not completed degree plans
- The spring 2023 headcount was 91 enrolled in courses, down from 95 in the fall
- 51 students had withdrawn from the program since 2012; 38 had left since 2018

There was a significant discrepancy between the listed roster of active learners and the actual remaining students. This finding created illusory faculty workloads and revealed a large imbalance across advisors. As a department, we all believed that our program's structure and data tracking methods were sufficiently effective in maintaining student engagement or accurately identifying those needing support when they were inaccurate. Instead, they provided a rosy picture of the program's health unsupported by reality.

Information I gathered was used to guide design changes, including data analytics, survey data regarding which students had completed degree plans and faculty committees, and tracking regarding program progress. This information helped me determine whether students received equitable advising support needed for on-time graduation, as evidenced by milestone progress, and supported distributing student support through faculty advising and department digital resources.

Equitable advising challenges

As reported during the previous semester, department faculty reported in formal and informal meetings that they often did not know which students' committees they were on or for whom they served as major professors. This situation partly arose because the staff member tasked with maintaining this information left the institution without training her replacement. The lost staff member stopped updating the student spreadsheet more than a year prior.

Further, I found no policy regarding student or departmental communication about committee changes, so it did not occur. As a result, some faculty only discovered they were no longer on a student's committee once a defense was completed. This led to conflict and distress for faculty dissertation chairs, committee members, and students who had hurt feelings. Therefore, an essential step in analyzing the program's state was to determine an accurate count of students for faculty. Determining that count allowed faculty to understand their commitments and foster caring advising communications. Since I am not only the designer but also the PhD program director, this information allowed me to work with the department to more equitably distribute advising loads more to ensure students were provided with the benefits promised by the department needed for success. This information was confirmed with faculty to determine whether there was faculty capacity to mentor students assigned to them equitably.

While we confirmed student assignments with each advisor, a major challenge emerged to providing equitable, beneficial advising. Faculty advising workloads were out of balance. In January 2023, five faculty served as dissertation chairs for 39 students; the remaining eligible 12 served only nine (9), which was unsustainable. As the primary advising resource for the program, this inequitable faculty workload

distribution harmed the program's ability to benefit students, creating an ethical challenge for me and the department. During discussions held formally and informally, some students reported excellent advising attention, while others reported neglect or confusion.

The lack of trained faculty advisors with adequate mentoring capacity made it difficult for students to receive the beneficent, attentive, caring attention needed to complete the program. This highlighted a need to change policy and process and advise resource allocation. My goal was to ensure equitable student support through faculty workload balancing.

Communication limitations

Reviewing previous department communications with students through historical emails, I found only sporadic informational messages about conference or publication opportunities. Few messages communicated information about program deadlines such as dissertation, registration, graduation, and other operations messages needed to support students and provide standardized whole-program advising. All communication with students was by email, and, other than the fall residency meeting, there were few synchronous opportunities for students to meet in real-time with faculty, other students, alumni, or experts to develop relationships and solve problems. As such, I sought to develop different forms of training communications (e.g., synchronous video, email, in-person) to ensure students received benefits from standardized advising provided by the program director without significantly increasing workload.

PROGRAM DESIGN CHANGES

Why should departments care about improving their operational effectiveness and service quality as part of supporting an equitable educational experience? This is an essential ethical question as academic units face growing needs to show care in their operations systems to retain and effectively advise and teach existing students while sustaining or growing enrollments. The authors assert that providing updated documentation, regular and responsive communication, celebrating student successes, and equitably meeting student advising needs shows beneficence to all by reducing frustration with poor processes and materials and improving their experience. Wasting student time and presenting an unprofessional experience can lead to losing faith in the program and system and may be perceived as malfeasance by students, leading to discrimination if some students receive excellent advising while others are underserved (Jones, 2023). Inequitable advising and other discussed challenges led to student retention challenges and poor word of mouth about programs, reducing student enrollment over time.

SSM Steps 3 (key definitions) and 4 (create a conceptual model) were central to determining desired program changes as part of an obligation to practice care (Engster, 2005) and to support ethical actions, including showing students beneficence by providing equity in academic advising or resource quality and distribution. These definitions help guide shared planning and discussion to be communicated to recipients of the program changes. Step 3: Key definitions guiding redesign

As a designer, I must know which ethics concepts I seek to foster in redesigning different decisions and system developments. Therefore, the initial key definitions produced in Step 3 were related to ethics of care from Noddings (2003) because they were the guiding ideas underlying my decisions:

- *Cared for:* Person receiving care
- *Carer:* Person caring for another
- *Caring about:* The *carer* appears to care about ideas, causes, and consequences of a problem the cared-for faces.
- *Caring for:* Demonstration of care shown through the *carer's* ability to identify with a situation, take responsibility, and accept potential consequences (Bass, 2009).
- *Receptive attention:* Actions such as modeling, dialogue, practice, and confirmation are taken to encourage students to engage in a moral life, evidenced through student decision-making
- *Modeling:* Demonstrate the ability to care and not lose attention to the *cared-for*
- *Dialogue:* Open conversations with no singular end that require the speaker and hearer to listen receptively
- *Practice:* Engage frequently in caregiving activities; supports ability to care
- *Confirmation:* Act based on the best possible motives to support relationships between *cared-for* and *carer*

However, from an ethics perspective, these were insufficient to guide all decisions. While drawn from ideas presented by moral philosophers such as Kant (1993), the following ethics concepts were defined by the American Psychology Association (2019) were also incorporated and modified to match the design's focus:

- *Beneficence:* Engage in actions that benefit society and improve lives, maximizing benefits and minimizing harms. Safeguarding participants in a situation means doing no harm and ensuring student welfare.
- *Integrity:* Promote accuracy, honesty, and truthfulness in science, teaching, and practice.
- *Justice:* Fairness entitles all persons to equally access and benefit from the contributions of individuals and organizations in processes, procedures, and services.

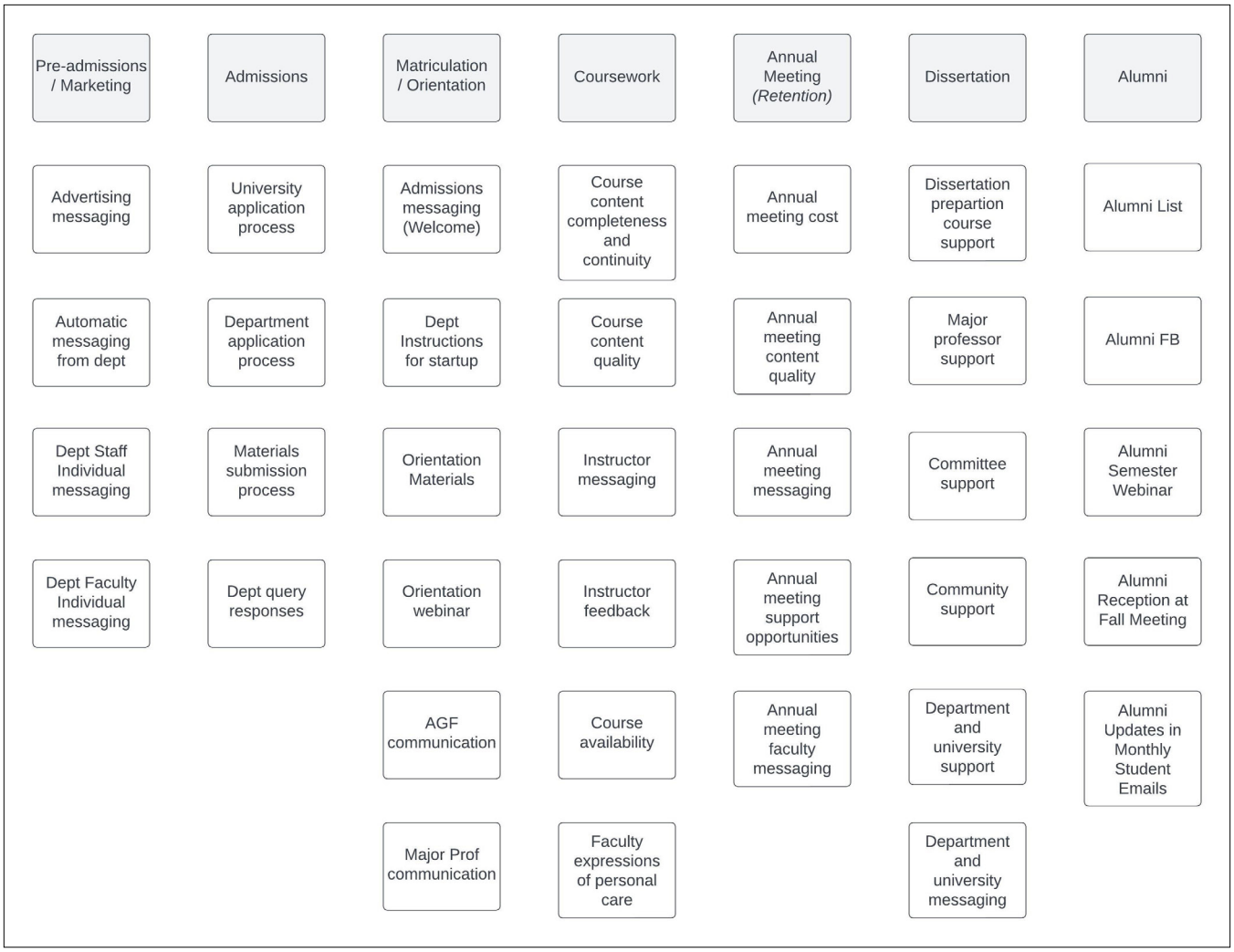

FIGURE 2. Communication analysis breakdown used to guide the redesign.

- *Equity:* All persons have equal access to benefits provided by an organization.

Lastly, because part of the goal was to design improved educational support and advising systems, I wanted to ensure students had experiences that led to on-time graduation, appropriate course selection, and accurate resources that reflected departmental integrity. Other key terms were chosen from operations management since the redesign focused on an operations design problem. The following concepts are drawn from Patel (2021):

- *Efficacy:* Whether a technology or system works as intended.
- *Effectiveness:* To what extent does a technology or system bring desired effects?
- *Efficiency:* Whether employed resources optimally reach acceptable levels of efficacy and effectiveness.

These key definitions contextualized and framed the new conceptual model of the doctoral program, grounded in an ethics of care for and about students that resulted in changes to resources, communication, processes, and system structure, seeking to ensure their needs were efficiently met.

Step 4. Conceptual Model Development

Not every issue could be addressed immediately, so feasible changes were identified by the program director to build a conceptual model fostering care, justice, and equity. In building the conceptual model, we depicted current efforts to communicate with students, broken down by type, purpose, and audience in Figure 2.

Each decision is framed by Ethics of Care (Noddings, 2003; 2012), constructs we sought to foster in the redesign as moral choices to provide the most positive learning and social experience possible to promote equity and justice in the learner experience. However, the system's complexity, limited time and resources, and the need to include stakeholders in decision-making meant that only a few aspects were addressed.

Supportive communication

To improve students' experience of feeling cared for and cared about, a major effort was made early in the design change process to provide regular, supportive communication in different forms with current and former students. Many decisions were intended to make student academic work time more efficient by compartmentalizing department communications to once or twice a month rather than having them spread out, requiring students to spend significant time monitoring email instead of completing program assignments, research, writing, and other tasks. Another important goal was showing care for students by designing a system of communication that respects their time and work to reduce students' feelings of being overwhelmed with courses and dissertations.

Monthly program update emails

At the outset, a design decision was made to implement monthly emails that would change student expectations about how we communicate with them regarding opportunities, policy changes, and other important whole program advising information students need to be successful. A standardized email template was created with positive messages regarding student successes (e.g., defenses, dissertations, and research training).

Celebrate student success

Further, as part of supporting the integrity perspective in department interactions, I created standardized email templates to rapidly communicate accurate information to individual students. The goal was to inform students that department leadership is excited about student progress when they reach milestones such as successful dissertation defenses. These messages were meant to equitably show that the program cares about student success while providing beneficial information about the next steps they must complete with registration and policies they must follow, such as time limits and deadlines to graduate on time and receive proper advising. This design decision aimed to reduce student need to monitor many different shorter department communications, showing care for them and their time by allowing them to plan early and then concentrate on their academic assignments, work, and home lives as an act of beneficence in system design.

Modeling care with effective documentation design

To guide the creation of new processes and program components, we employed a backward design model (Wiggins & McTighe, 2012) was employed. Basic sensemaking regarding the program's current state was completed at the beginning of February 2023. Using that information, a whiteboard brainstorming session in the program director's office with past students and some current ones took place to develop goals and practical outcomes of the doctoral program design restructuring following Noddings' care principles. During later discussions, students and faculty reported struggling with locating and using department documentation, which made gathering forms needed for defenses stressful. As part of caring *about* student and faculty experiences with documentation and practicing our ability to care, a major undertaking was needed to redesign and update many forms and related web page information.

Advising documentation

In addition, the doctoral handbook had not been fully updated since the distributed (i.e., primarily online) program began in 2011. Therefore, many minor policy changes in previous updates were sometimes oddly placed, had grammar or other issues, were inaccurate, or included irrelevant information (e.g., program application requirements). While the graduate school handbook provided some dissertation templates, they were difficult for students and faculty to use and poorly aligned with our program's thesis structure.

Therefore, I again sought to increase the efficacy of the program's non-human advising documentation support by creating standard dissertation templates to reduce student stress in the dissertation phase. These templates include APA and graduate school-mandated standard chapter and section headers, automated tables and lists with proper formatting, modeled abstracts, references, and other components. Because we offer two dissertation options, templates are provided for traditional five-chapter formats and manuscript-style dissertations.

Advising dialogues through regular meetings

A challenge to being a doctoral student in a primarily online program can be feeling disconnected from peers and faculty mentors due to transactional distance (Moore, 1997). As such, we sought to foster

more substantial dialogue about student and program advising needs by implementing regular open meetings with students four times yearly in the long semesters (i.e., fall and spring). In the redesign, monthly meetings were implemented with mentors and the director to understand better students' problems with courses, assessments, and program structure. The goal was to ensure increasing equity of advising benefits, standardization of experience, and responsiveness to student needs that sometimes required changes to tactics or, more significantly, systemic changes to processes and policies.

Increasing alumni connections

Another aspect of the program was a failure to support or communicate with our alumni once they graduated. After students graduated, there were no systems to maintain contact with them as they began their careers. Therefore,

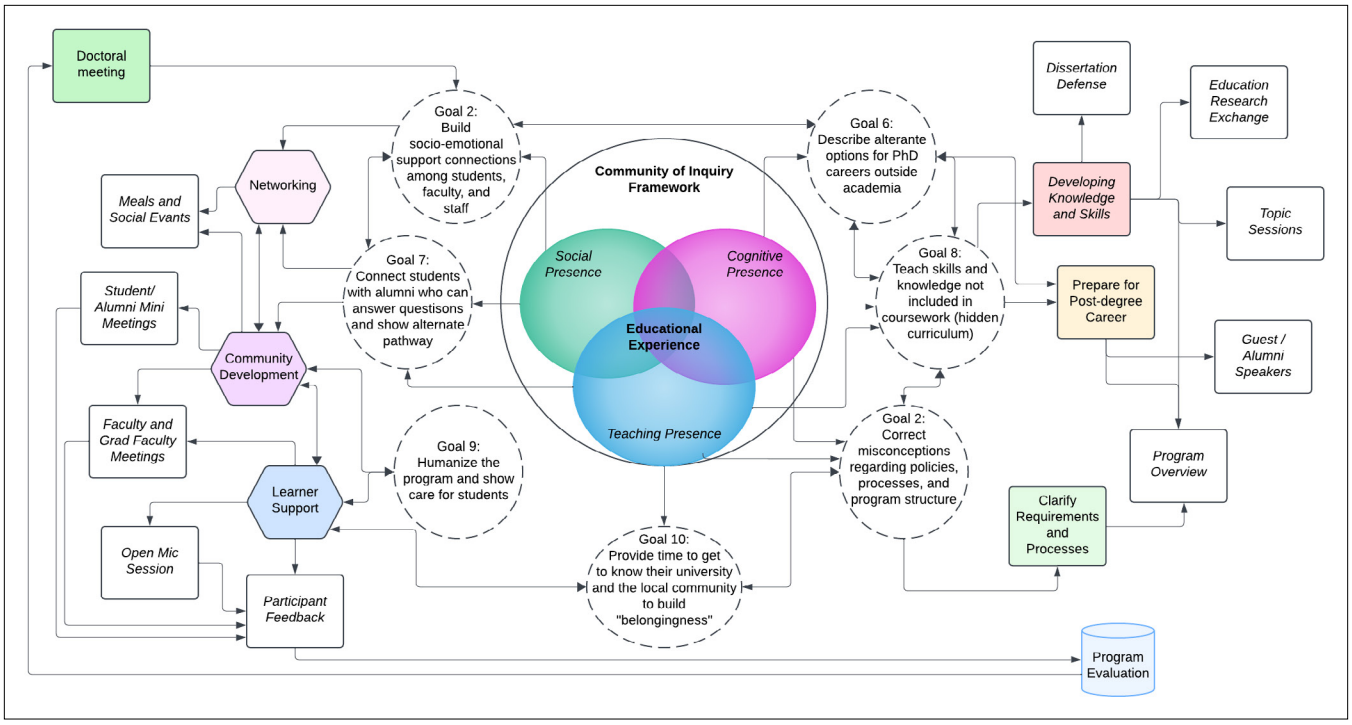

FIGURE 3. Systemic diagram of the fall residency meeting created by students using Garrison et al.'s (2010) Community of Inquiry framework.

I redesigned our processes to include capturing student emails and contact information after their dissertation defense, along with celebratory email communication.

In addition, alumni were invited to participate in a new Alumni Innovator Webinar, where they share their experience as doctoral degree holders since graduation, answering current students' questions about their possible futures. In addition, we redesigned the fall residency meeting to include an alumni speaker to foster interactions and networking between current students and our alumni. The goal of alumni inclusion was to foster caring dialogues among faculty, students, and alums as a basis for future supportive, beneficent activities and mentoring outside the program and link students to future employment.

Step 5. Compare the Current Situation with the Conceptual Model

As the year progressed, we found that each program aspect needing changes came with its own challenges. Creating and maintaining the new communication processes was time-consuming for a single person to implement. This work leads to more significant time commitment for the program director; however, the activities likely provide better student support to improve retention and leave students feeling *cared for* based on how the faculty and staff treat them.

Students visualized the fall meeting from how they understood its educational and pedagogical purposes using the Community of Inquiry as a lens (Garrison et al., 2010).

Figure 3 includes a systemic diagram (i.e., Systemigram per Boardman & Sauser, 2008) created by two student authors that resulted from their analysis. One major aspect missing in the visualization was the inclusion of advising time during the meeting, but this was a pervasive problem throughout the doctoral program's design.

Provide consistent advising

We discovered that, partly due to faculty turnover, there was little consistency in advising across students, and sometimes, each student was told something different about dissertation expectations and course enrollment requirements, and no student had a full picture of how to best work through the program. Therefore, some students reported receiving excellent advising, some reported mediocre advising, and others had little or negative advising experiences. To increase equity in advising, we wanted to ensure that students and faculty were taught the same processes, procedures, and expectations for advising across all students. Fairly distributed advising benefits for all students is a justice issue, and by ensuring more consistent student experiences through training and standardization in formal meetings, our goal was to build a more reliable system of student support.

Forms usability

The most challenging immediate design aspect was making the department's old and out-of-date doctoral program forms usable and effective for students as advising information they could access without a person. Each form needed

to be updated to reflect current policy or to be structured to limit deviation from the cohort model (i.e., enrolling out of order). Such deviations led to difficulty with student registration later in their degree progression and sometimes made courses unavailable as needed, harming equitable support for these students. Sometimes, the old degree plan form design led to students signing up for courses not offered, so they were redesigned to ensure students took courses in alignment with their cohort. Some forms had not been updated since the department was formed.

Students and faculty alike were often frustrated at their inability to locate needed information quickly or found outdated forms with broken web links. Further, the forms were inaccessible to our students with visual or other impairments, so updating these was a matter of upholding ethical principles of justice and equity.

Handbook difficulties

Another major challenge was updating the doctoral handbook PDF to align with more than a decade of policy changes that were haphazardly added to the document, and some meant to improve learner experiences had not been implemented. Additionally, unnecessary information, such as admission requirements, was included in the handbook, confusing students, so eliminating these reduced the document by several pages, reducing how much students needed to read. The designer selected students and faculty to review the updated handbook to ensure it was coherent and the information reflected updated policies and procedures that the resource provided desired beneficial affordances.

Going forward, we expect the improved documentation of policies and procedures, updated website information, and user-friendly templates will become indispensable resources to program students, faculty, and staff.

Improving the fall meeting learning experience

The in-person Fall Doctoral Residency meeting is a significant activity in which the department shows care for the doctoral program. This short conference took place for the first time in-person since 2019 in late September 2023, allowing stakeholders to analyze the designed learning experience and offer feedback on how it could be improved. As part of this re-design project, the lead designer collected feedback in five different ways: 1.) post-meeting student experience survey [Appendix A], 2.) open debrief with students at the end of the meeting led by a senior student, 3.) formal and informal post-meeting debriefs with faculty and staff led by the lead author, 4.) ASES survey [Appendix B], and 5.) qualitative data collection and analysis with students in a systemic change-focused doctoral course that taught

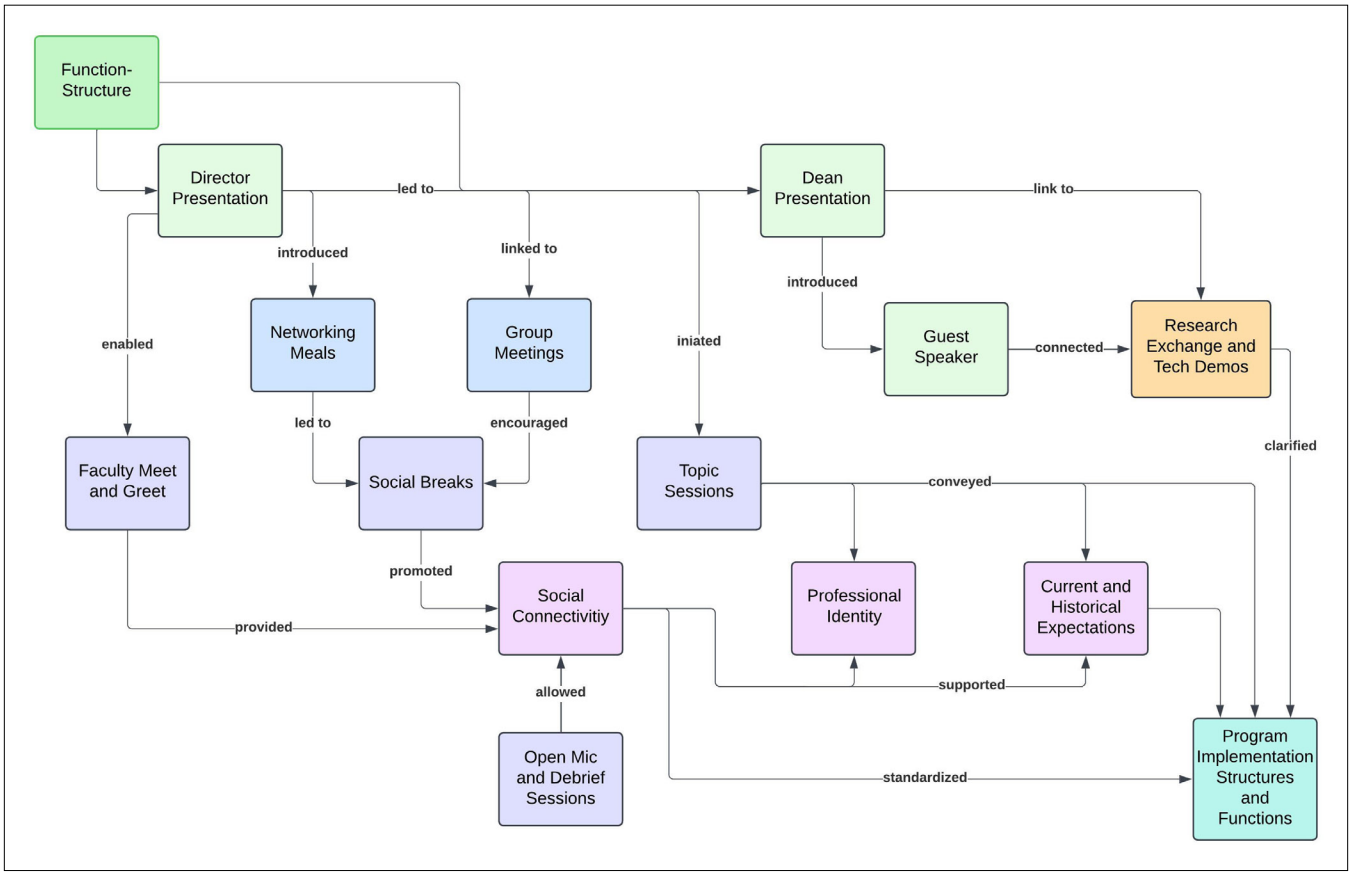

FIGURE 4. Systemic diagram of the fall residency functions and structures created by a student analysis team.

how to employ soft systems methodology [Appendix C]. This course was ongoing in the same semester the meeting was held, so memories were fresh for the students involved in the project. Our approach allowed the lead designer to collect data from and with students as co-designers using the post-meeting survey regarding students' experiences in different stages of their careers (n=62).

The open feedback meeting led by a student facilitator and the lead designer of this piece allowed unfiltered discussion regarding program experiences and the fall residency meeting. The student leader shared these anonymized results with me and participated in the team-based analysis. Students reported enjoying the fall meeting and valued connecting and meeting with their faculty members. Figure 4 includes a Systemigram produced by students that resulted from their functions-structure analysis of the residency (Banathy, 1992; Blair et al., 2007).

Students also wanted the meeting to end earlier to help with travel home and suggested reorganizing events to improve coherence and time use. They also requested more student-led sessions so they could learn from one another.

The faculty debrief led by the designer/director provided various views about what could be changed and improved with the program and meeting. Faculty were pleased with the fall meeting, but the length of the days (12-15 hours) was difficult for most faculty driving in for the meeting. Further, they requested a later start with fewer breaks to shorten the length of each day. Last, they wanted fewer sessions where students reviewed program expectations and more time to work with advisees. Combined with survey data, student interactions at the residency meeting were contextualized by reported student interactions outside the meeting over the previous nine months to provide us with context regarding their service and care experiences with staff, faculty, processes, departmental systems, documentation, and the degree to which the systems and processes show care for them (n=34). The results from the ASES survey were wildly diverged by individual students, showing a lack of standardization resulting from the original design of the advising systems and advisors.

A smaller, focused group of students representing approximately 15% (n=6) of the program's student population offered additional feedback on the annual meeting during a class session for a program course. The student group was provided transparent information about the event's planning, including financial estimates, previous and final schedules, calendars, meeting presentation slides, calls for proposals, and other relevant artifacts to frame how the meeting was developed and why.

These students serve as co-designers and authors on this design case, so they had direct input into improving the learning and social support experiences at the fall meeting. It was essential to include this high degree of involvement so that changes in the meeting and other program learning support structures communicate *care about* and *care for* our doctoral students by giving them an equitable voice in how we were redesigning their experience through different data collection communication channels. This approach was used to ensure its beneficence is evident. Figure 5 includes implemented changes and actions taken in the first year in line with original and revised activities.

The following changes to the residency were proposed and are listed by how easy they were perceived to implement:

- Move the Educational Research Exchange to the second day
- Start the Residency earlier on Thursday and end by noon on Sunday
- Have students act as tech support
- Eliminate residency requirement after 5th year

After completing the students' analysis, each recommendation was presented to the faculty, leading to a positive faculty vote on eliminating the residency requirement after the 5th year. The policy change will be implemented soon. The other suggestions are in process of being incorporated into the fall meeting. Because most changes would have to be implemented by the program director and one staff member, the next stage of change definition and feasibility evaluation was essential to our design process.

Step 6. Assess Feasibility and Define Changes

The large amount of data collected was valuable in informing change decisions, but sometimes, it was too much for the lead designer to consider while properly managing day-to-day doctoral program supervision. Because the students, staff, and faculty have significantly varied perspectives and needs that are difficult to balance, not all suggestions could be accommodated. This situation led to discussions with different stakeholders about why the system was designed as it was and the barriers to changing certain aspects of the program. All requests by students and faculty for changes to the fall meeting were deemed feasible and essentially only required calendar updates or asking for volunteers to provide technology support during the meeting.

More problematic to the redesign was eliminating the requirement that students attend the residency after the fifth year because this change required discussion and a faculty vote to change policy. By the end of the discussions with department stakeholders, many design changes were accepted and made, which was a large investment of the designer's time and effort.

FIGURE 5. Changes made to the program's design by month

Step 7. Implement Proposed Changes

While many changes were made in the first year of the program, implementation of the redesign could only be done as the director/lead designer had time and available resources (i.e., human, financial, time), which were all limited. Modifications and additions were prioritized by those that could be made without feedback, such as paperwork corrections, regular emails, meetings, or others that the director could implement without a faculty vote. Later in the implementation year, changes requiring faculty acceptance and voting were concluded. Life and work events such as the birth of a child, work on university accreditation, and a grant award also slowed the rate of improvement.

Step 8. Evaluate the Effectiveness of Design Changes

As an educational system designer, the central goal of this project was to implement program changes to show care through the design of daily support actions and the interactions among faculty and students. A secondary goal was to implement a way to measure whether the changes and

program as it was restructured were perceived by students as showing care for and care about them, indicating the project moved towards system improvement. From my perspective and past research, caring communications are a core component of the academic or instructional service provision that enables educational success (Robinson et al., 2017). Historically, organizational success metrics relate to tangible outputs rather than activities that facilitate those outputs and are therefore liminal, taking place in between significant measurable milestones that are meant to correlate with likely repeat customer interactions and satisfaction with an organization's services (Warren, 2018a; Parasuraman et al., 1988). Quality measures examine how people feel regarding whether and how the organization provides services that meet their needs, and having a plan for measuring the success of any design case is necessary prior to implementation. The primary measure for the initial implementation was a survey focused on evaluating the quality of the service the new program design is intended to provide so the director would know which elements were successful and which need improvement in the next revision cycle.

Post-residency experience survey

The post-residency survey consisted of 26 questions (Appendix A). The non-validated instrument was meant to broadly capture students' perceptions related explicitly to the three and ½ day residency meeting to ensure doctoral students meet their state requirements for face-to-face contact with faculty because the program cannot be entirely online due to state law. This tool explained to the department whether different sessions and design decisions met their needs and allowed students to provide anonymous feedback on improving the meeting. We can examine the redesign feedback from future program students, faculty, and staff through various lenses, including service quality and responsiveness. Parasuraman et al. (1988) created a widely used instrument called SERVQUAL for this purpose, which was the basis for our Academic Services Experience Survey, which was used as one instrument for measuring the effectiveness of our design changes. SERVQUAL is widely used in organizations to evaluate customer perceptions of service quality and responsiveness, which we sought to improve in departmental resource provision and advising through the program redesign. The Academic Services Experience Survey (ASES) asks users to review department advising and support resources based on five primary factors originating in SERVQUAL: tangibles, responsiveness, reliability, assurance, and empathy.

- **Tangibles.** These are aspects of the system related to the physical facilities, distance-delivery tools, and other educational support mechanisms.
- **Reliability.** Questions in this domain relate to how and whether the information provided by the department is correct and complete. Program support offers students the resources to succeed, showing that the department cares about them.
- **Responsiveness.** In this domain, questions relate to how well advising, staff service, and faculty respond to student requests for help to show care for them and their needs.
- **Assurance.** This set of questions ties into whether the employees have the appropriate knowledge to successfully support this system and educational service by evaluating the courtesy of employees during interactions and whether those interactions inspire trust and confidence.
- **Empathy.** In this area, questions relate to whether interactions with staff, faculty, and administrators show a sense that the system's employees have empathy for the needs of students.

While the SERVQUAL instrument is a good starting point for evaluating traditional consumer services, and it addresses areas aligned with consistency, resource availability, ethics, and care, as demonstrated in the factor descriptions, it does not align precisely with the structure of higher education. The Academic Services Experience Survey [ASES] (Warren et al., 2019b) was initially created to support a master's degree program in the same department where the current study occurred. ASES was validated with current program students and department faculty with expertise in academic advising who could determine whether items measured what we intended to address.

With ethics as a design consideration, providing students with the educational value they are paying for, ensuring the doctoral program is responsive and reliable, and showing empathy to students is necessary for its long-term sustainability and leads to increased retention and student success (Gallup et al., 2018). took the perspective that it is ethical to design for student success using the Care Ethics lens to ensure the program fosters beneficence and equity (Spector, 2016). ASES was modified to incorporate Ethics of Care components to evaluate whether the redesign was effective at meeting these objectives. The ASES survey was validated with the department's master's degree and another college's bachelor's degree-seeking students (Warren et al., 2019a). To accommodate Ethics of Care aspects, questions were added to address department advising services by showing care for and care about the doctoral students in online and face-to-face delivery modalities (Robinson et al., 2017). These aspects were added to serve as a measure of beneficence from its design.

- **Ethics of Care.** Finally, these questions ask students whether their interactions with the advising and other departmental systems make them feel cared for and cared about as learners as part of the program's brand to ensure sustainable growth: *We Care About You* (Mourad et al., 2011). While empathy is most closely associated with the structural and emotional aspects of Ethics of Care, all

five elements care for and about a company's consumers. This includes students who interact with an academic department's personnel and facilities in an educational setting.

While the initial ASES data indicated that the redesign helped support students and made them feel that the advising services improved and the other support systems were more usable, we found that many problems remained, and the redesign process was difficult to implement.

CHALLENGES TO THE REDESIGN

There are always tradeoffs with implementing system changes, especially when there are unintended consequences. For example, it increases the level of communication with students from a few scattered emails per year to monthly or, more often, raises my director workload to around ten hours per month for that activity alone. Further, planning alumni and other speakers for events, holding synchronous meetings with students and faculty, conducting regular data analysis to determine faculty workloads, communicating milestone celebrations to students, and engaging in messages of care through advising now are activities that require around 20 hours or more per week. Seeking to level the distribution of doctoral students among existing faculty remains challenging because of the systemic conditions that led to the uneven workloads in the first place. Changing the status quo is difficult; some program community members resist changing the original design. Such resistance to change in higher education can make it difficult to realize student-centered program improvement.

Advising Difficulties

Every faculty member has their perspective on what constitutes good advising and how much responsibility they have for students. Despite providing asynchronous information through email, live training for students and faculty on expectations and resources, and reporting the iniquity in advising workloads, changing expectations is difficult. No amount of information about uneven work distributions and stories of student difficulties can make faculty take on students if they feel they are at capacity. I cannot make students read emails and attend or watch recordings of synchronous meetings with the best design intentions. Disagreement can also arise concerning the proper amount of advising needed for students to be successful. Today, four faculty members of 14 advise 90% of the students working on dissertations. Some faculty meet with dissertation students every week and provide detailed feedback, while others meet infrequently and/or provide limited, generalized feedback. The efforts to standardize advising expectations and to ensure equitable and beneficent advising resources remain difficult, likely because of limited understanding among program faculty about how critical quality advising is to the long-term survival and health of the program.

Communication Mode Design Challenges

Each aspect requiring design changes presented practical challenges. Dealing with basic technology issues, such as university authentication problems with systems that access data and reporting, was frustrating. Something simple, such as creating email lists, required multiple levels of approval and took me weeks to complete with the support of our staff. The activities involved in the program redesign, such as creating and implementing new communication processes daily, are time-consuming and interfere with other responsibilities. Not having sufficient administrative support staff means that the program director bears most of the weight of implementation. However, this systematic and engaged communication approach likely provides better student advising support that improves retention and student connections to the program.

Further, while open meetings were held monthly last year, no more than three students participated (3%), and fewer than ten watched the recordings in the meeting with the most views. Often, questions answered during the open meeting were asked in the days following, which was also frustrating. The program redesigners may want to consider collecting additional data to determine the reasons for limited attendance at monthly meetings. However, a review of how many students open the monthly emails shows a rate of less than 38%. It may be that other social media could be more effective at reaching our students because different users prefer different communication channels. Our students range in age from 18 to 75, so choosing the right mix of communication types is difficult but important for providing equity in information sharing.

Difficulty of Designing for Alumni

Alumni remain underserved because designing and implementing caring communication systems and messaging for continuing doctoral students is time-consuming. While I held two alumni innovator webinars and hosted an alumni speaker at the fall residency, the alumni email list remains incomplete, and the social media channels created in the spring of 2023 remain unused because of a lack of time and staff to implement them. As a doctoral program director, I sought to balance accreditation activities, director work, a large doctoral student advising workload, and grant work with family commitments. However, without additional resources such as graduate assistants or dedicated staff members, reaching out to alumni and better including them in our community will remain challenging, and they are lost to us as partners in supporting current students.

Forecasting, Messaging, and Service Challenges

In spring 2023, supply chain demand forecasting techniques were employed to develop surveys to determine students' specific course needs to more accurately identify courses that should be offered in summer and fall. My goal was to provide advising and topics courses to all students more equitably and ensure on-time student graduations and knowledge benefits. This data collection approach successfully forecasted which courses would be offered and helped identify students with differing needs earlier in the advising process. However, these surveys were not reissued in the fall because of competing work and family demands. Unfortunately, failing to capture this data resulted in significant problems getting students into the correct courses in the spring and summer of 2024. In this systematic approach, dropping one process can generate cascading problems for various stakeholders. The time spent correcting issues after the fact deters from other service provision areas. Therefore, adequate staffing is necessary for true ethics of care approaches. Care must be provided for those providing the services and the students.

Forms Usability Difficulties

Most forms were created in Adobe Acrobat over a decade prior, so redesigning them was challenging and sometimes required building new versions. This experience was vexing because many forms were created with old Acrobat versions incompatible with what we needed. I asked several students and faculty to review and test the new forms to ensure they had high usability and were fortunate that they were willing to provide feedback. The forms were finally added to the website after more than 16 rounds of feedback from students, faculty, staff, and a professional instructional designer to ensure they were usable. This review process, while onerous, was meant to reduce the likelihood of problems once they were published on the website, and the information matched the integrity desired by ensuring it was accurate and trustworthy. My goal was for the forms to exhibit high usability for all students, faculty, and staff, including those with visual impairments, to ensure equitable access.

Handbook Redesign Concerns

Creating the new doctoral handbook from the decade-old version was a tedious process. Improving the forms, improving readability, ensuring usability, and reviewing policies to ensure alignment with graduate school requirements required feedback from many stakeholders. While asking students and faculty to participate in reviewing the updated documentation was time-consuming, ensuring usable and efficient learner experiences was necessary and an important component of SSM. Students responded positively that it was an opportunity to authentically learn about design concepts, usability, and user experience research featured in the doctoral program. The new handbook was completed and released after about nine months, just before the new student cohort arrived.

Fall Meeting Changes and Challenges

Since the last residency meeting, we have not had the opportunity to implement these changes fully. Instead, we are working through the meeting redesign recommendations with the residency planning committee to ensure that whatever we do improves the learning activities, communications of care, and experience students have at the upcoming event.

CONCLUSION

There remain challenges to effectively showing care through personal relationships between faculty and students that are long-term. First, five of 15 faculty members are responsible for more than 90 of our active dissertation students. This problem grew over several years as faculty left the department, putting the burden of their students on just a few to provide advising during their most difficult phase and leading to inconsistent advising that harms graduation rates and student success. From a care ethics perspective, the few faculty with the highest load are less likely to be able to show strong care for students as they move them quickly through the dissertation process rather than building solid relationships equitably across their students. As such, redistributing workload over the next few years will be essential in redesigning how the program equitably admits students and assigns faculty to committees fairly.

Despite this challenge, we notably improved in the first 18 months. Graduation is one positive measure of student learning in determining whether the changes resulting from the care-infused redesign were successful. The number of students graduating from the program increased from 22 in 2022 to 29 in 2023. Another measure of whether a program's learning design is successful is whether students facing hardships and considered at-risk can complete it. The 2023 graduates included several students identified as at-risk who reported feeling disconnected from the program and that we did not care about their success. While we cannot know for certain, the fact that these students were able to graduate in 2024 suggests that the changes positively impacted their ability to complete the program.

Our future design changes will aim to ensure students learn effectively in coursework and less formal teaching structures such as dissertation mentoring. Such improved learning and equitable dissertation advising experiences should lead to better student retention, positive word of mouth about our program, and growing enrollment. To foster this outcome, we want our alumni to leave with positive regard for the program and its faculty and a sense that we treated them with an ethic of care.

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APPENDIX

Appendix A: Post-residency Doctoral Meeting Questionnaire

All Items included Likert-Scale response options: *Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree*

Q1. Overall, the 2023 Annual Doctoral Meeting was a beneficial experience.

Q2. Information and logistics about the Annual Doctoral Meeting were communicated in an effective manner.

Q3. The schedule was easy to follow and use.

Q4. Information about the annual meeting on the Learning Technologies Canvas course was accessible.

Q5. The keynote address and Q&A session by Dr. XXXX was useful and informative.

Q6. What was your favorite session? Why?

Q7. What would you like to see more of in a future annual residency meeting?

Q8. What would you like to see less of in a future annual residency meeting?

Q9. Please include additional questions/comments/concerns/suggestions about the Annual Doctoral Residency Meeting.

Appendix B: Modified ASES Instrument for Students

Demographics

Q1 Gender

Q2 How long have you been in the doctoral program?

- Less than 1 Year
- 1 year
- 1-2 years
- 2-3 years
- 3-4 years
- 4-5 years
- 6-8 years
- 8-10 years

Q3 Approximately how often have you interacted with people and resources in the department in the last academic term?

- Not at all
- 1-3 times
- 4-10 times
- 11-20 times
- 21 or more times
- Click to write Choice

Tangibles

Q4 When I visit, there is up-to-date equipment to support my education.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree
- N/A - I have not been to the department

Q5 The physical facilities are visually appealing.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree
- N/A - I have not been to the department

Q6 In-person communication with staff is courteous.

- Extremely professional

- Somewhat professional
- Neither professional nor unprofessional
- Somewhat unprofessional
- Extremely unprofessional
- N/A - I have not been to the department

Reliability

Q7 I could easily find information about the program on the website.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q8 The unit's website has correct information.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q9 After reading the information on the department or other university websites, I know whom to contact for more information or how to apply to the program.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q10 The technologies that the department uses to provide advising are effective at providing academic services (e.g., phone, email, Zoom, Canvas, web sites).

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Responsiveness

Q11 When I email the department with a question, someone usually responds within 48 hours.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q12 Staff members or faculty members communicate when tasks they are doing for me should be completed (e.g. degree plan creation).

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q13 Staff are never too busy to respond promptly.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q14 When a staff member promises to complete a task by a certain time, they do so.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Assurance

Q15 Staff are knowledgeable about the program as indicated by their ability to answer questions.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q16 Staff reliably keep accurate records (e.g. degree plans, program progress).

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q17 Staff inspire confidence with courteous communication.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree

- Strongly disagree

Q18 Staff are trustworthy.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Empathy

Q19 Staff are always willing to help me as a student.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q20 Staff are sympathetic when I have challenges.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q21 I can trust employees to give me individualized attention that solves my problems.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Q22 Staff care about ensuring I have a positive experience at the institution.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Ethics of Care

Q23 There is a professor in the department that cares about my well-being as a student.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly disagree

Q24 When I have personal, professional, or academic challenges, someone in the department is ready to help quickly.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly disagree

Q25 The staff in the department care about my success and are responsive when I need help.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly disagree

Q26 Students in the department are encouraged to care for one another during the program.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly disagree

Q27 Communication by the department and college administration shows that someone cares about my success as a student.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q28 Department faculty care about my success.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q29 There is regular communication from the department that shows they care about ensuring my effective and efficient completion of required registration, milestone completion, and other periodic tasks.

- Strongly disagree

- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Q30 The way the digital resources (e.g., website) are structured show respect for me as a student and my time as a busy professional.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

Overall Satisfaction

Q31 Overall, on a scale of 1-10, how satisfied have you been with your academic service interactions with the department in the last 3-6 months?

- Extremely satisfied
- Moderately satisfied
- Satisfied
- Somewhat satisfied
- Neither satisfied nor dissatisfied
- Somewhat dissatisfied
- Dissatisfied
- Moderately dissatisfied
- Extremely dissatisfied

Appendix C: Systems Class Analysis Directions

Assignment 1 Directions

In your same small groups, discuss the film and the systems that were present in the story, making up the micro-, meso-, and macro-systems linked to the fall meeting.

- This includes peer, industrial, educational, military, as well as any relevant family, medical, economic, social and similar support systems, etc.
- There are many present, so include at least see four or five interrelated systems.

Assignment 2 Directions

Your group will self-organize the task of planning how you will accomplish creating a report that resulted from your discussion. It must include:

- Description of the system in narrative form
- Systemigram depicting the fall meeting system components as your group understood it
- 1-3 pages explaining the designed system relations experienced in the Fall Residency Meeting that you included in your Systemigram

This does not need to be completed tonight, but the planning should so you can split up tasks to distribute the labor. Your work can take place both during class tonight and throughout the coming week, because we will review these together in Week 8.

At that time, we will also discuss as a whole group what went into your self-organization and completion of tasks this evening that took place with minimal guidance from the instructor, which is what happens when coursework ends. At that time, we will also have the experience of how to validate and instrument with stakeholders in a way that allow the instrument to be successfully used later on to study a system of interest.

Assignment 3 Directions

Again, we will break into small groups of 3-4. Discuss your system of interest and what you are producing for the first task and why.

- What systems did you see?
- What relationships exist among them?
- Are there direct impacts on education already evident as these systems interact? How will design and development connect?
- What implementation and evaluation questions should be asked about the system? Ask for feedback.