The Synergy of 'Design Thinking and Communication' and Its New Faculty Mentoring Program

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Abstract Design Thinking and Communication ("DTC") is an interdisciplinary university program designed primarily for first-year engineering students at Northwestern University. Positive interdependence exists at the heart of this 27-year-old program, which brings together two seemingly disparate disciplines. The program contains two courses that combine instruction in communication with instruction in engineering design and are taught jointly by an instructor from each discipline. This creates a rich and diverse learning experience for students and a powerful pedagogical experience for faculty.

New faculty join the DTC program every quarter. In their first two quarters, new faculty are paired in co-teaching relationships with experienced faculty. The resulting relationship is an example of the positive interdependence present within DTC. The experienced teacher shares their knowledge of the program, while the new teacher shares innovative ideas and approaches.

Teaching in an established program can be challenging, so the DTC director team created a mentoring program for new faculty. The program utilizes best practices and consists of an orientation, weekly cohort meetings, faculty observations, and faculty reflections. New faculty have the opportunity to learn from each other and from the program directors. Each element of the mentoring program is designed to help new faculty develop pedagogical strategies for teaching the established DTC framework, while also guiding them toward experiencing a sense of belonging and inclusion. Many new faculty remark that the co-teaching relationship and the mentoring program are pivotal to their success in teaching DTC.

Keywords co-teaching relationships, collaborative teaching models, design thinking and communication, faculty mentorship programs, first-year engineering curriculum, higher education faculty development, inclusion, positive interdependence, professional development

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Introduction

In her 2023 presentation at the Conference on College Composition and Communication, Lisa Del Torto spoke about positive interdependence and its role in collaborative teaching relationships. Specifically, Del Torto referenced David W. Johnson and Roger T. Johnson's 2009 study, which focused on the concept of positive interdependence; this occurs "when the actions of individuals promote the achievement of joint goals," leading to new insight and discovery (p. 366). Situated within the concepts of positive interdependence, individuals facilitate each other's goals, and in so doing, obtain greater achievements than they would if they'd been working alone. This type of collaboration fosters comprehensive program growth and well-being. Del Torto gave her presentation as one of a panel of faculty who teach Design Thinking and Communication (hereafter "DTC") at Northwestern University. DTC is an interdisciplinary initiative designed primarily for first-year engineering students that functions similarly to a structured program. Offered jointly by the Segal Design Institute and the Cook Family Writing Program, DTC embeds instruction in communication with instruction in engineering design across two courses – Design 106-1/2 and English 106-1/2. DTC is home to 500+ students, 45+ faculty, and 1,000+ annual enrollments. Faculty hold a range of job titles, including postdocs, adjuncts, teaching track professors, and tenure track and tenured professors. Across every course section, a communication instructor is paired with an engineering design instructor. At the heart of DTC is the concept of positive interdependence, which is greatly enhanced by our new faculty mentoring program. In this article, I review the basics of DTC and address all aspects of the new faculty mentoring program, highlighting the collaborative impact it creates within the DTC program. I incorporate both faculty survey responses and my own formal and informal observations from my experience as a DTC director and individual who once engaged in DTC as a new faculty member.

Northwestern's Interdisciplinary First-Year Design Program

Design and communication share a common goal that creates a dynamic interplay within the DTC program. Each discipline is iterative and relies on drafts to accommodate the user experience. In DTC, students are paired with community project partners to develop user-centered solutions that address unmet needs in areas such as healthcare, accessibility, and sustainability. Each section of DTC receives its own project partner or partners, although the same partner(s) may work with students in more than one section. Throughout the partnership, students communicate with their project partners in emails, reports, and final presentations.

A common thread through both communication and design is primary and secondary research. Students conduct and document project partner interviews, user observations, and user testing. They use their well-documented primary research to inform their design process. What starts as a seed of an idea in week 2 becomes a mockup in week 5 and often a prototype in week 10. Students tap into the dual disciplines of engineering design and communication, using lessons from their engineering design and communication instructors to guide their process. Within this interdependence of instructors and disciplines, first-year engineering students learn that using written, verbal and mathematical communication not only helps them present their designs to a variety of audiences but actually helps them in the process of creating their designs. This, then, prepares them for internships and eventual careers where they will be successful and competent engineers and communicators.

DTC has existed for 27 years. It began in 1997 as a collaborative effort between three engineering professors and three writing professors. Part of the "Engineering First" initiative, this program was developed for first-year engineering students. Prior to the development of the program, first-year engineering students were required to cross from their home school, McCormick School of Engineering, into the Weinberg College of Arts and Sciences, where they obtained their writing course credit by taking English 105. According to Northwestern University's course catalog, English 105 is defined as emphasizing all phases of the composition process, in addition to research methods and critical thinking, and also including careful review of student papers and reports (Northwestern University, 2024). While it remains a worthwhile course, it wasn't created with engineering students in mind. Early DTC leaders meeting in 1997 wanted the required communication course to be something that engineering students would find particularly meaningful and relevant.

When the then-dean of McCormick asked his engineering faculty to create such a course, those faculty realized they needed to enlist the help of professors from Northwestern's Writing Program. Penny Hirsch, the first Writing Program Director of DTC and Associate Director of the Writing Program, remembers meeting regularly for a year with a committee of three writing faculty and three engineering faculty to explore how a fusion of disciplines could be achieved. Together, the program pioneers created Engineering Design and Communication ("EDC"), the precursor to Design Thinking and Communication. After much discussion, they realized how much the iterative writing and design processes resemble each other and thus decided that the curriculum would give equal weight to each and the course would be team-taught. This approach differed from the more common integration of writing into engineering courses where writing instruction was subordinate to engineering and focused mostly on editing skills. The early leaders also chose to include the word "communication" in the course title (as opposed to a word such as "writing") to acknowledge that engineering communication is multimodal and discipline-transcendent. It includes written reports, research protocols, project partner communications, equations, measurements, graphics, mission statements, ethical writing, oral presentations, interview scripts, and more. Program leaders decided that students would earn equal credit between the two disciplines—one credit of engineering program work and one credit of writing program work (Hirsch, 2016).[1]

With equal weight given to both disciplines, the program pioneers set out in 1997 to learn each other's disciplines so they could teach in a way that made each discipline stronger, invoking the positive interdependence between communication and engineering design. They presented together at conferences; they traveled abroad to speak with foreign schools about the program; and they wrote journal articles. Because of her work in EDC, Hirsch was chosen as one of two people to represent Northwestern's Segal Design Institute at the National Academy of Engineering's Frontiers of Engineering Education (FOEE) symposium. She and other key founding faculty from Engineering First were nominated for the National Academy of Engineering Bernard M. Gordon Prize for Innovation in Engineering and Technology Education. It was at these kinds of conferences that Hirsch and other leaders shared their innovations with other faculty (Hirsch, 2016).

And so, the DTC program was born from the roots of a positively interdependent relationship between professors from two seemingly disparate disciplines. As Hirsch (2016) has noted, students wrote for real audiences and designed for real users. Students engaged in individual classes and also in the larger community, learning how to integrate important communication skills such as revision, editing, research, composition, and speaking into a curriculum that had them designing projects for real users. This framework remains in use today.

Equality has always been an important element of DTC. There are no lead instructors in DTC; all instructors are equal, no matter one's rank. This is something many faculty note as one of their favorite parts about teaching in DTC. Engineering design and communication instructors are present for the entirety of every class session and share equal time teaching the course. They meet to divide teaching

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[1] Here, it's important to note that courses at Northwestern University are typically one-unit, which is equivalent to the three-unit or four-unit courses offered by most other universities. Students in DTC enroll in both courses in the sequence, each of which offers 1 credit of course work (.5 credit of engineering course credit and .5 credit of writing course credit). For both courses combined, this adds up to 2 credits of course work (1 credit of engineering course credit and 1 credit of writing course credit).

responsibilities prior to stepping into the classroom. Because of the commonality of both disciplines, sometimes they even teach at the same time. This partnership approach extends to grading; both instructors meet at the end of each quarter to discuss final assignments and calculate final grades. Because DTC was formed from the nucleus of two courses (design thinking and writing), both of which are necessary for the first-year curriculum, the Cook Family Writing Program and Segal Design Institute are able to justify this equal partnership, which includes paying two instructors to teach DTC. The heart of DTC resides in the benefit to students, who get to experience both disciplines at the same time, while learning from an expert of each.

The proof that DTC faculty find success is discovered in the number of faculty who teach DTC over multiple years. Several faculty have taught DTC for decades. A couple have even taught DTC since the program's inception or close thereafter.

The New Faculty Mentoring Program

Taking steps to ensure faculty satisfaction is important to DTC leaders. During the 2015-16 academic year, DTC leaders conducted a study on faculty satisfaction and experience with teaching DTC. The results indicated that faculty wanted a formal mentoring system for new faculty (Hirsch, 2016). Such a program would provide new faculty with the tools necessary for teaching this well-established course, while also helping them to understand the important elements that go into the co-teaching partnership. In addition, it would provide experienced faculty with co-teachers who were already prepared to teach, thus alleviating the burden of having to both mentor new faculty and teach a full class of students.

Acting on the survey, DTC leaders created a mentoring system. The system included a quarterly orientation for new faculty and as-needed 15-minute check-ins. That concept was further developed in Fall 2017 when Lisa Del Torto and Alex Birdwell, the DTC co-directors (Del Torto from the Cook Family Writing Program and Birdwell from the Segal Design Institute) designated time for an expected, though not required weekly hour-long meeting for the full cohort of new faculty who came from both the Writing Program and Segal. During those meetings, new faculty met with program leadership and reflected upon their experiences teaching DTC. In addition, the co-directors shared resources and advice on co-teaching, grading, giving feedback, managing the workload, supporting student teams, etc. In the fall of 2020, I began working with Del Torto as the Writing Program's incoming DTC Director and helped to continue the mentoring program. In the summer of 2022, I conducted research into best practices for faculty mentoring programs. Starting in the fall of 2022, I codified the weekly meetings with Birdwell, turning them into established and mandatory new faculty cohorts[2]. We also developed the mentoring program to include observations and reflections, which enable new faculty to learn from reflection-in-action.

First Point of Contact

The first point of contact for all new faculty is, of course, the hiring process. New faculty are often recommended for teaching roles by experienced faculty. Others find DTC through word-of-mouth or open position advertisements posted on the Writing Program's website. However new faculty discover DTC, the first part of onboarding is the interview. As the Writing Program's one-time Director of DTC, I have noticed that during the interview, one question almost always arises: What support, if any, do new DTC instructors receive? Many new faculty view DTC as a massive undertaking, and in many ways, it is. It's a decades-old program that combines two very different disciplines into one course. Materials, course calendars, and lessons have already been created and disseminated into the common DTC course infrastructure system, generally Canvas. New faculty often wonder whether they'll be able to keep pace with the requirements for successfully teaching a course that's already been created, and not by their own design.

Fortunately, one of the cornerstones of DTC is that even though the program is well-established, there is always room for diversification. When I interview new faculty, I tell them all about the onboarding and mentoring process, and I notice that they begin to visibly relax. I also tell them that even in this decades-old course, there is always room for innovation. *Their* innovation. Each faculty member possesses expertise in a certain subject area. Some are experienced researchers. Others are experienced with technical writing, or ethical writing, or reflective writing. Some faculty are theater experts skilled in public speaking and giving presentations. On the engineering design side, faculty bring expertise in subjects like sketching, electronics, mechanics, and computer science. DTC is structured around enabling faculty to not only teach about their expertise, but also to lend their expertise to the creation of program materials, weekly lectures, and faculty meetings. Each time DTC leadership spearheads the creation of new curriculum, they call upon faculty to create materials using their unique expertise. As a result, faculty have created everything from ethics workshops to sustainability toolkits to chapters on teamwork and research.

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[2] New faculty cohorts range in size from one new faculty member to about six or seven. Cohorts are always led by the two DTC directors. One director is a faculty member with the Cook Family Writing Program; the other is a faculty member with Segal Design Institute.

New DTC instructors have remarked that they learn two things fairly quickly. First, they learn that new faculty voices matter. Indeed, the DTC program champions the inclusion of new voices. Second, they learn that they will engage in an in-depth mentoring program, beginning with an orientation, working through six weeks of meetings with a new faculty cohort, and culminating in a final reflection written by the new faculty members and shared with DTC program directors. Many new faculty are relieved to learn they have so much support. And isn't that the point? By supporting new faculty, the DTC program ensures their successful integration into the program, while also providing them with the resources necessary for their retention and success.

Partners in Education: The DTC Teaching Partnership

Another thing new faculty learn during the onboarding process is that each DTC class is partner-taught by a communication instructor and an engineering design instructor. New teachers are always paired with instructors who have experience teaching DTC. For example, a new communication instructor will always be paired with an engineering design instructor who has taught DTC several times before. This pairing serves two purposes. First, it ensures that the course is taught by subject matter experts. Second, it creates a level of positive interdependence. The experienced instructor understands both the communication and engineering design elements, while the new instructor brings their unique viewpoint to an established course and the knowledge they're gaining in the new faculty cohorts. The experienced instructor guides the new instructor in course design, while also benefiting from the new instructor's fresh perspective. While the experienced instructor isn't an official mentor, they serve an important role in onboarding because they're present for each of the new faculty member's first experiences in teaching the course and can therefore guide and direct as necessary. As such, what might have been two halves becomes a single, interdependent whole, greater than both parts.

Experienced DTC instructors often guide new DTC instructors during class, offering gentle reminders or bits of information about course happenings. For example, in the third week of term, students are instructed to come to class ready to brainstorm ideas for their project. To facilitate the effort, many instructors set out bowls of Skittles and M&Ms to "energize" their students for the fast-paced brainstorming session. (There are many large bags of both treats stored away within the deepest closets and darkest offices of Segal.) At the beginning of the class session, instructors hand out dozens of sticky notes with the expectation that by the end of class, each sticky note will contain some element of a design – a word, sketch or concept. Instructors then lead students through different brainstorming activities. These activities result in students rushing to the white boards and posting their sticky notes. Soon, every white board is covered with yellow pieces of paper containing pencil scratchings and the beginnings of fabulous ideas.

In the midst of all this, new DTC instructors often stand with their mouths slightly open as they survey the chaos of their once peaceful classroom. These new instructors are sometimes unsure what to do and are many times enjoying just watching their students. In these moments, experienced DTC instructors will offer new DTC instructors suggestions for how they, too, can help shepherd the creative chaos. Eventually, new instructors jump into the fray, often nibbling on a handful of Skittles or M&Ms, and begin offering tips and encouragement, helping students reach new heights with their ideas. During new faculty meetings, new instructors report they've never been a part of anything like the brainstorming session, but they loved every moment.

The type of guidance offered to new DTC instructors by experienced DTC instructors during brainstorming is common in the DTC classroom, but it's also kept to a minimum. I've learned that experienced DTC instructors frequently shy away from offering guidance during instructional moments because they don't want to impede on their teaching partner's pedagogy. As a result, much of their guidance comes during weekly teaching partner meetings. In an anonymous survey disseminated online via Qualtrics during the winter of 2023, which was sent to members of the new faculty cohort and their co-teachers, and which aimed to assess the effectiveness of the new faculty mentoring program, one experienced DTC instructor noted, "My co-teacher and I generally meet every week to plan ahead, which greatly reduces any stress." A new DTC instructor stated, "Meeting with my teaching partner before class each week is very helpful, if not crucial, to my sense of preparedness." During these meetings, both partners will decide on the week's lessons and activities, and then divide pedagogical responsibilities. While both instructors are always present in the classroom, sometimes one instructor will lead a lesson while the other offers silent support, or both instructors offer a lesson collectively.

One collective lesson may be developing the project's mission statement. The mission statement is a concise summary of the problem which is "solution-independent" and contains "measurable goals" (Yarnoff et al., 2020, p. 33). To provide an example, consider the mission statement written by DTC students who were asked to develop a way for an individual to easily loop and unloop a resistance band for use with physical therapy exercises. While physical therapy bands are often looped by tying a square knot, untying the knot can be difficult and timeconsuming. Students given this project interviewed their project partner, and conducted primary and secondary research, after which they wrote the following mission statement: "[T]o improve the use of therapy bands by designing an adjustable, quick, and safe attachable module that allows for easy connection and adjustment and minimizes the possibility for abrasions or any other related injuries." This mission statement identifies "success elements," or aspects of the design when, if met, would mean students had achieved success in meeting their goal for the project, or mission. Examples of success elements include the words and phrases "adjustable," "quick," "safe," "easy connection," and "minimizes the possibility for abrasions." Each of these words and phrases is measurable. Once students develop a mockup of what will potentially be their final design, they have their project partner test the mockup to determine whether it is, among other things, "adjustable," "safe," and allowed for "easy connection." Sounds simple, right? However, guiding students toward writing a concise mission statement which contains measurable terms can be quite challenging.

Students might just as easily have written, "To improve the use of therapy bands by designing a convenient module." But how do you define "convenient?" What is convenient to one person might not be as convenient to another. Arguably, the words "quick" and "easy connection" might also be debated, which is why instructors have students define key terms. The point is that in writing a mission statement, students must consider both the design elements and the language elements. This, then, requires the teaching expertise of both instructors. The engineering design instructor helps students conceptualize the design, while the communication instructor helps students write terms which are easily quantifiable. For new DTC instructors, this is an opportunity to work collectively with their teaching partner to guide their students in a lesson integral to the overall success of their DTC project. Generally, teaching partners use their weekly meetings to plan collective lessons, defining roles in order to create memorable and important lessons for students.

Sometimes, teaching partners use weekly meetings to decide on new approaches to the DTC curriculum. As aforementioned, new DTC instructors are encouraged to incorporate unique approaches to pedagogy. In fact, one experienced DTC instructor noted how important it is for new DTC instructors to feel comfortable incorporating their own pedagogical methods. This instructor stated, "Most of the people I have taught with have brought new things into the class," which is something the instructor noted they particularly valued. In fact, experienced DTC instructors are chosen for this co-teaching relationship based on their willingness to teach with new instructors and also on their ability to foster the growth and development of new instructors. One experienced DTC instructor stated, "I would like to continue to make sure that the opportunities DTC offers—not only to those who choose to take it, but also those who choose to teach it—are not taken for granted. And I don't want to take them for granted, either." For this faculty member and others, teaching with new faculty serves as a way to connect with the opportunities inherent in teaching within the DTC program. Another faculty member noted that they trust the directors to pair them with new faculty who have something unique to offer the DTC program. Experienced DTC instructors learn much from the teaching partnership, as new instructors bring new ideas and offer a chance to see the program through new eyes.

For their part, new DTC instructors also value the co-teaching relationship. One new DTC instructor stated, "The support provided to new instructors via faculty meetings and co-teaching with an experienced professor make me much more comfortable than I could be otherwise." Another new DTC instructor noted, "I very much appreciate the collegiality of DTC and I am learning to be a better teacher by listening to and observing my peers." This speaks to the positive interdependence present in the co-teaching relationship; both teaching partners bring unique insights and grow together to engage with the opportunities offered by the partnership. This type of mentoring provides benefits to both the new and experienced faculty member, who learn from one another's innovation and experience (Cordie, Brecke, Lin & Wooten, 2020; Johnson & Johnson, 2009). For new DTC instructors, the co-teaching relationship provides guidance and a sense of belonging, as they're paired with an instructor who truly wants to see them succeed.

Of course, the teaching partnership isn't without its faults. Sometimes, there is friction and the co-teaching relationship falters. Some examples of friction may include disagreements about division of responsibilities and class time, or differences in teaching and learning philosophies. To navigate conflict, many co-teachers will engage in productive one-on-ones, working through their issues and developing plans of action. Most of the time, they're successful in their efforts. At times, co-teachers will approach the DTC directors for support. In my experience, instructors generally view this as a last resort.

When we as directors meet with co-teachers, we're careful to provide them with space to hold their own conversations and make their own plans. We only interject when mediation becomes necessary. In my experience as a director, these meetings almost always resolve amicably, with the co-teachers ready for a fresh start. Once or twice, they've ended less amicably. But that's an outlier and definitely outside the scope of this paper.

New Faculty Cohorts

Another important element of DTC's new faculty mentoring program is the new faculty cohort. Prior to the beginning of their first quarter teaching DTC, new DTC instructors are provided with a packet of information. Such enrollment packets are important for helping them understand the DTC teaching experience (Lumpkin, 2011). The DTC enrollment packet includes the common DTC syllabus, DTC co-teaching guidelines, a co-teaching conversation starter, and ways to respond to students in distress. It also includes a welcome letter inviting new DTC instructors to an orientation. During the orientation, the DTC directors go over the materials in the packet, fostering open discussion. New DTC instructors explore the DTC curriculum; learn about the co-teaching relationship; and discuss pedagogical strategies for fostering student well-being and success. During this orientation meeting, new DTC instructors also meet one another for the first time. This first meeting is crucial because new DTC instructors will meet together in new faculty cohorts for the first six weeks of the quarter. After one orientation, a new DTC instructor remarked, "I very much appreciate the collegiality of DTC."

That same new DTC instructor also stated that "I am concerned that I do not know the material well enough." The six weekly meetings help new DTC instructors become more comfortable with the material. During these meetings, new DTC instructors receive direction from the DTC directors. Meetings generally begin with the DTC directors going over that week's course assignments and discussing the various pedagogical approaches other DTC instructors have used to ensure student success. DTC directors also open the floor up for discussion, offering new DTC instructors an opportunity to suggest other ways for approaching DTC assignments. As an example, there are a number of different ways different DTC instructors have implemented the brainstorming activity discussed in the previous section. Some pass out sticky notes. Others have students draw sketches for homework. Some instructors have students come to class with dozens of ideas already written down. Brainstorming is such a creative activity in the DTC course sequence that it provides a unique opportunity for new DTC instructors to tap into their unique ideas. During a weekly mentoring session, DTC directors might invite new instructors to share their ideas with the group. They might also encourage the group to build upon those ideas. This type of collaboration sparks new approaches and collective creativity. These meetings turn into round table sessions where new instructors across both disciplines—communication and engineering design—engage in shared learning. This learning is often spontaneous and results in a building-on of ideas. New DTC instructors report feelings of inclusion and equity as they develop a positive collaborative relationship with DTC directors and with other new instructors. Thus, these meetings act as a space for the continued development of rapport and support, fostering a sense of belonging and psychological safety (Lumpkin, 2011).

During weekly meetings, new DTC instructors also have time for open discussion. One new DTC instructor stated, "Our weekly new faculty meetings are a fantastic opportunity to discuss the upcoming classes and ask questions." Often, these share-outs result in the development of camaraderie among new faculty members, who share positive experiences and student/instructor successes. At other times, new DTC instructors share challenges. For example, a new DTC instructor might face difficulties with engaging students in teams, which is an essential unit for the DTC student experience. Students in DTC classes work together in teams of three to five throughout the quarter, and at times, these teams experience conflict. During one new faculty mentoring session, a new DTC instructor voiced a concern that one of his teams was falling behind with work. The members of the new faculty cohort offered this new DTC instructor encouragement and support. The directors suggested that he schedule a meeting with his team, ensuring his co-teacher was also present. At the next cohort of new faculty, the new DTC instructor reported back that the team was starting to thrive, and that the discussion he'd held with the team and his co-teacher proved very helpful.

In many ways, the new faculty cohort is an example of positive interdependence. New DTC instructors from both disciplines come together to discuss their classes, their pedagogy, and their students. Engineering design instructors learn from communication instructors, and vice versa. Both groups meet with the DTC directors, who share their experience and knowledge of the course. In this way, the experienced meets the new, different disciplines converge, and both grow together to create new approaches for student and instructor success. One new DTC instructor noted, "DTC is unlike any course I have taught before. Usually, I am given material or subject to teach. I learn it and know what I am going to say when I walk in the classroom. That's not the way DTC works. There is more of a sense of guidance than instruction, something I am not used to but am coming to appreciate and enjoy."

Observation and Reflection

While the new faculty cohort has been a staple since the fall of 2017 and the co-teaching relationship has existed since the beginning of DTC, a relatively new inclusion is observation and reflection. Observation occurs relatively early, typically within the first few weeks of the ten- to eleven-week quarter. Many new faculty are anxious about this aspect of the mentoring program. They're still learning the course and pedagogical strategies for teaching DTC, and some wonder whether they'll pass muster in an evaluation – particularly one handled by a DTC director.

During my time as the Writing Program's Director of Design Thinking and Communication, I was always quick to reassure new DTC faculty. The observation does not exist to evaluate whether a new DTC instructor is fit to teach DTC, I told them. Rather, it exists so a DTC director can learn more about the new DTC instructor's pedagogical approach, which helps to strengthen mentoring.

To keep the observation neutral, I engage in an ethnographic observation. I visit the class session and sit well-removed from the class, in a place as inconspicuous as possible. Indeed, sometimes the instructors remark that they've forgotten I was even in the room. During the observation, I take notes on everything that happens in the class session, and only what happens in the class session. Once the session has concluded, I read through my notes, then add my own insights about what went well and what might potentially have gone better. In the two years observations have been conducted, what went well far outweighs what could have gone better, and I'm generally very complimentary. Again, observations exist primarily to learn more about the way the new DTC instructor approaches teaching.

Observations provide the DTC directors an access point into the new DTC instructor's teaching experience. As Uwe Flick (2011) points out, "Ethnography is interested in analyzing the making of social situations by taking part in the relevant processes and by observing how they unfold" (p. 97). The experienced DTC instructor who partners with the new DTC instructor has the opportunity to take part in the relevant processes throughout the course, which makes them uniquely qualified to serve as a mentor. The DTC directors, who serve as mentors during the new faculty cohorts, may use the observations as opportunities to "learn by seeing" or observing, which then gives them the knowledge to help the new DTC instructor achieve success.

During one memorable class session, I watched a new DTC instructor engage with the brainstorming session discussed earlier. This instructor was hesitant at first but soon learned the rhythm of brainstorming. By the end of the class, the instructor was engaging in deep discussion with his students, helping them develop new and different ideas. Due to his encouragement, his class became even more excited about their project.

By observing the interactions within this new DTC instructor's classroom, I was able to pinpoint when the change occurred. I spoke with the instructor about it afterward. The instructor was eager to learn more about what I had observed. By discussing the moment of change with me, he was able to further develop his pedagogy to include additional opportunities for student/instructor engagement. This type of positive interdependence between me and the new instructor led to greater insight and clarity.

The final aspect of DTC mentoring also involves a level of positive interdependence. Once the course is complete, the new DTC instructor is invited to reflect on their experience. What went well? What might have gone better? Both the observation and the reflection allow for reflection-on-action or reflecting on a teaching event after it has transpired, which has been shown through research to be pivotal in the continued development and success of teachers (Pinsky, Monson & Irby, 1998). Donald Schön (1982) writes about reflection, “In this process, which is essential to the acquisition of a skill, the feelings of which we are initially aware become internalized in our tacit knowing” (p. 52). Through reflection, Schön (1982, 1987) holds, the individual grows in knowledge based in discovery of self and of others through whom they work collaboratively.

New DTC instructors put a great deal of insight into their reflections. They enjoy looking back and looking forward. They’ve reached a pivotal moment in their DTC careers; they’ve successfully taught their first DTC course, and they now have the confidence they can teach DTC again. Reflecting on their pedagogy gives them the opportunity to build strategies for teaching future DTC classes. Their new confidence allows them to both develop their own pedagogy, and also to help the DTC directors understand their experiences as new faculty. In their written reflections, new DTC instructors inform the DTC director team what went well with the DTC course and what might have gone better. Sometimes, they discuss what might have gone better not just for themselves but also offer strategy suggestions for the program as a whole. This, then, presents a new type of positive interdependence. This collaboration between directors and new instructors leads to opportunities for program growth and development. Both parties benefit from the positive interdependence present within the relationship. And both benefit because they know the new DTC instructor has succeeded in their endeavor and will likely be back to teach DTC again. The DTC program has retained a successful instructor.

The Benefits of DTC’s New Faculty Mentoring Program

There are many benefits associated with mentoring new faculty, both for the new faculty and for the department and university. New faculty enjoy relationship-building with other colleagues, increased productivity, personal growth, feelings of belonging and support, job satisfaction, and a smoother transition into the program, all hallmarks of successful mentoring programs (Lumpkin, 2009; Sorcinelli & Yun, 2010; Lumpkin, 2011). Over the last three years, the DTC program has experienced rapid growth. During that time, we’ve welcomed over three dozen new faculty members. Almost every one of those new faculty members has taken part in the DTC mentoring program, and almost all have gone on to teach DTC in additional quarters. Many echo the sentiments of this new DTC instructor: "I hope to grow as a teacher." Many have thanked the DTC directors for instilling them with the confidence necessary for success and stated that the DTC mentoring program has offered them a place of support and belonging. They've told the directors that the mentoring program gave them the resources necessary for pedagogical growth. Several have gone on to take part in pilot studies designed to bring new material to DTC. Others have gone on to leadership roles. One faculty member who joined the DTC program in 2021 and took part in the new faculty mentoring program has just become the newest DTC director, taking over for me. With the addition of our new faculty, DTC is going strong. We're hopeful it will continue to thrive for another 27 years.

Conclusion and Takeaways

The longevity and success of DTC invariably comes with some important takeaways. The first, and perhaps most important, is that it *can* be done. Two instructors can successfully teach a course together, even if they're from two completely different fields. New faculty can be made to feel welcome and encouraged to teach to their unique strengths and their students' unique needs—even in a program that has been going strong for decades. Engineering design and communication can coexist in a way that creates "the achievement of joint goals," and leads to new insight and discovery (Johnson & Johnson, 2009, p. 366).

Another takeaway is that new faculty mentoring programs are essential for success—not only of new faculty, but also of their students. When new faculty are equipped with pedagogical tools, knowledge of the program, and connections to other instructors, they can focus on effective teaching. Teaching partnerships also benefit. Indeed, experienced teachers note relief when they realize their co-teacher doesn't need mentoring but is already an effective educator and partner.

A final takeaway? If faculty feel heard, if they feel supported, they will develop a sense of belonging in the program. In turn, this creates collective ownership—a true programmatic community. And that's what we've created in DTC.

There's a reason the title of this article highlights the 'synergy' of Design Thinking and Communication. Throughout, I've emphasized how DTC is built on the concept of positive interdependence. This collaborative approach supports a structure where each member of the DTC community experiences greater success than if they were acting alone. In essence, the entire program is predicated on the effects of synergy.

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