

Implementing Convergence Education: Exploring the Role of Academic Advising in Cross-College Programming

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Rebecca's current work represents a synthesis of her broad interests, all oriented toward the exploration of the possibilities within institution such as higher education. Her commitment to addressing barriers and fostering innovation for social change shines through in her professional journey.

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Work-in-Progress: Implementing Convergence Education: Exploring the Role of Academic Advising in Cross-College Programming

Abstract

Academic advising is integral to student learning and program navigation in higher education. Positioned at the intersection of curriculum and faculty, advisors help students navigate academic structures while institutions respond to societal and workforce needs. Convergence education, which can be done through cross-college programming, reshapes traditional departmental and disciplinary boundaries by sharing knowledge and methods to generate integrated educational outcomes. This paper looks to understand how academic advising functions within a cross-college, co-taught convergence program: a design- and innovation-focused minor collaboratively delivered by engineering technology, liberal arts, and business. The program sequences courses that allow students from any major to engage in multi-semester design projects. A distinctive feature is cross-college co-teaching, where faculty from different colleges teach together in the same classroom, enabling cross-functional teams and blended disciplinary perspectives. While these course structures create learning opportunities, they introduce advising complexities (e.g., plan-of-study alignment, policy coordination, and student wayfinding). Using a qualitative design, the researchers analyzed semi-structured interviews to explore preliminary findings of advisors' roles within the ecosystem of higher education and navigating cross-college co-taught programs. Findings aim to inform the design of cross-college programs and offer future research areas to support advisors working within convergence-based models.

The Move Toward Convergence Education

The landscape of higher education is constantly changing driven by the evolving world and its shifting needs. Students have been enrolling in courses that expand academic training beyond traditional disciplines. While higher education traditionally focuses on discipline-based experiences to prepare students for careers within their chosen fields, workforce demands are shifting, and educational models are being implemented to prepare students for emerging workforce contexts characterized by convergence of disciplines. This shift is fueled by contemporary employers and today's challenges requiring graduates who possess more than isolated disciplinary expertise; rather, students need the capacity to integrate perspectives, skills, and methods across fields and collaborate on multi-faceted challenges [1],[2]. In an information-driven society, knowledge and problem-solving does not stay within a single discipline, they occur at the intersections of multiple fields [2]. Therefore, students need to be able to draw from more than one area of expertise. With this information, institutions continue to rethink how curricula are structured, shifting toward more interdisciplinary and convergent approaches that emphasize disciplinary collaborations [2],[3].

Convergence education (CE) has emerged as a bridge between these societal demands and higher education. For this study, CE can be defined as an approach where knowledge is synthesized across disciplines and integrated through transdisciplinary learning experiences to address real-world challenges [1]. Recognizing the high socio-political stakes involved in

converging disciplines, to meet the needs of students [4] and society [3], universities have increasingly taken up the call to advance CE, positioning it as a core strategy to remain responsive in a changing world. Convergence is the integration of diverse ideas, methods, and approaches to create solutions to problems, a concept promoted by organizations such as the National Science Foundation and the Korean Research Foundation as a nontraditional research strategy [5],[6]. From this perspective, disciplinary distinctions become less useful when courses are intentionally designed to operate across fields [2]. As a result, long-standing siloed structures within academic institutions are being challenged by emerging areas of study that prioritize disciplinary convergence [2].

However, higher education remains largely organized around traditional, siloed academic disciplines. Although many interdisciplinary fields existed prior to current discussions of convergence and were developed to address societal challenges that extend beyond a single discipline, institutional structures often continue to reflect these boundaries [2]. Institutions are not expected to abandon discipline-specific training, but rather to create opportunities for students to engage in CE. While CE centers on helping students integrate knowledge across disciplines and apply it in varied contexts, it represents one of several frameworks available for designing and implementing convergence-oriented learning environments [7]. How programs for CE are implemented extend beyond the effectiveness of curricular design, but also to how institutions adapt to support cross-college programming.

While CE in higher education can provide students with integrative learning experiences, the ecosystem of the institution can shape CE initiatives. Higher education institutions that cultivate complex thinking skills through transdisciplinary learning environments have been shown to support students' ability to integrate knowledge, navigate ambiguity, and apply learning across contexts, particularly when compared to more traditionally siloed disciplinary pathways [4]. CE can help address large challenges, such as technological advancement, economic competitiveness, and global problem-solving, that inherently require coordination across disciplinary domains [3]. While CE can be understood as a response to the need for more integrative educational experiences, its implementation is not uniform; rather, it is shaped by the institutional ecosystem, including organizational structures, faculty collaboration, resource allocation, and disciplinary norms. Contextual factors ultimately influence how, and to what extent, CE is enacted within higher education settings.

Co-Teaching as a Mechanism for Change

One mechanism for implementing CE is a cross-college, co-teaching model. This approach involves faculty from different colleges and different disciplinary units, teaching together in the same classroom, enabling the formation of cross-functional student teams and the blending of disciplinary perspectives [8]. While this model offers advantages, such as fostering innovation and allowing students from any major to engage in multi-semester design projects, it challenges traditional departmental boundaries and institutional structures [8]. Successfully implementing these initiatives requires more than pedagogical shifts towards convergence; it

demands robust institutional support and the alignment of administrative systems to manage the structural friction created by disciplinary silos [9]. To enact CE, faculty engage in co-teaching.

Co-teaching for CE in this study consists of two instructors from different academic units jointly teaching a course that converges disciplinary content. The instructors teach together in the same classroom, at the same time, throughout the entire semester, focusing on areas where disciplinary perspectives naturally intersect. The two co-taught courses challenge existing institutional structures and systems organized around disciplinary and college-based boundaries. The ecosystem of higher education relies on key personnel like academic advisors for the sustainment of courses and programs, such as this CE initiative. Academic programs can be complex, with requirements defined by combinations of courses, credits, or units needed to complete each component [12]. Therefore, students can depend on academic advisors to help navigate their educational options and the faculty rely on advisors to impart the knowledge of the classes on the students. Without coordinated institutional and administrative alignment, the transformative potential of cross-college co-teaching models for CE can fall short.

The Advising Gap

While much attention is paid to the faculty and curricular aspects of CE [10], academic advising remains an important space to understand but is an under-researched element of institutional success with CE. Academic advising is as a professional field where advisors help students navigate higher education [11]. Advising is integral to students' higher education experience and program navigation. Yet what advisors are expected to do and how their work is evaluated differs across institutions, often leaving the role loosely defined and its outcomes unevenly measured [11]. At many universities, advising is primarily conducted through one-to-one communication between students and advisors, who may be faculty members or professional staff affiliated with specific academic units [12]. Academic advising is important for the structure of higher education, and it is typically structurally housed near where faculty make decisions around curriculum [13]. However, advising structures and responsibilities can vary across institutions. Most colleges and universities are organized into distinct colleges, departments, majors, and plans of study, often with additional layers such as minors or electives that span across disciplinary boundaries [13].

Advising is integral to students' higher education experience and program navigation. Advisors work to keep students informed about opportunities connected to their educational and career objectives, academic advisors provide a valuable source of guidance [11]. Their broader institutional knowledge can shape the opportunities students are aware of and pursue, including experiences such as CE that extend beyond a single discipline [13],[14]. Advising is at the core of where students can blend together aspects of the coursework available at the university into a cohesive whole that reflects students' interests [15]. As institutions iterate curricula in response to local and national trends, advisors are expected to stay current and guide students through academic systems and structures [16].

Academic advisors also assist in identifying challenges and strategies for managing students' experiences. This is due in part to advisors' unique position to understand each student's strengths and ambitions, which help advisors navigate institutional structures in meaningful ways

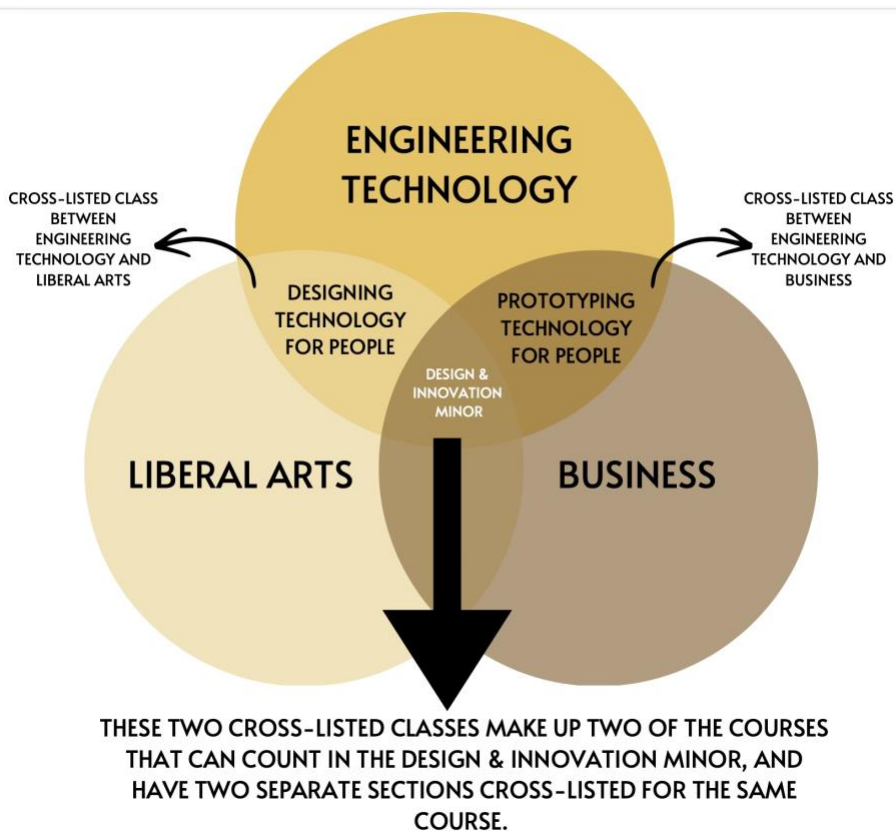
for students [11]. Aligning students' goals with institutional resources can enhance students understanding of the value of college, increase campus engagement, support learning, improve overall satisfaction, and encourage continued enrollment [14]. While the specific roles of advisors may differ across institutional contexts, their function remains integral to the structure of higher education, supporting the implementation of curricula designed to prepare students for meaningful participation in their communities and broader society [15]. Academic advisors support a large number of students while working within institutional systems to help create and connect them to available opportunities.

At the same time, advising takes place within demanding contexts. The National Academic Advising Association (NACDA) [17] found that the median number of students to advisors was 296:1. Therefore, advisors can experience a high volume of students to guide in addition to navigating changing university systems. Therefore, in advising meetings, advisors rely on academic planning resources to support students as they navigate course selection, choose majors or minors, plan for graduation, and address a range of other academic matters [12]. However, many of these tools remain limited to formats such as documents or PDF files that present degree requirements and course prerequisite information without interactive functionality [12]. This matters because advisors help students recognize how a CE minor fits within their plan of study and ensure they can enroll without delaying progress toward graduation. However, advisors' knowledge of the systems for CE shapes students' ability to access and navigate CE opportunities. Therefore, it is important to understand academic advisors' experiences working within cross-college, co-teaching programs, particularly in the context of a large university where institutional structures are complex and decentralized. This study aims to examine advisors' perspectives in this setting in order to inform the design of cross-college co-teaching programs and provide actionable guidance to better support advisors working within convergence-based models.

Study Context

This research is based upon a cross-college co-teaching program with the College of Engineering Technology, College Liberal Arts and School of Business at a large mid-western public research institution. Within the Design & Innovation minor there are two co-taught courses that have two professors teaching in the same classroom at the same time. The two co-taught courses meet the natural intersection of disciplines and are designed to be taken in sequence to build on the expertise and follow a human-centered design process. The Design and Innovation minor's first co-taught course combines anthropological perspectives with developing innovation technology. The class, Designing Technology for People, has a professor from the College of Liberal Arts co-teaching with a professor from the College of Engineering Technology. The Design and Innovation minors second co-taught course, Prototyping Technology for People, combines business planning with product development. The class is co-taught with one instructor from the School of Business, and one from the College of Engineering Technology. The courses are combining two different classes from different colleges at the institution, in order to have two professors listed in the registration system, this can be seen in Figure 1, where the two co-taught courses are cross listed to combine disciplinary homes.

Figure 1. Depicts the combination of disciplines involved with the two co-taught classes for CE within the design and innovation minor.



In order for students to be enrolled in either of the two co-taught classes, advisors need to be knowledgeable of how the co-taught classes appear in the registration system, as they have different sections for each academic unit. For example, the first co-taught class in the series combines an anthropology professor, who is listed with the anthropology side of the course ANTH, as well as an engineering technology professor, who is listed with the engineering technology side of the course TECH. Therefore, when students enroll in the class, they enroll in one of the sections, either the ANTH or TECH section, even though the students will be in the same class, at the same time, with two professors. This is similar to the other co-taught class, which combines a business professor and an engineering technology professor. Furthermore, the section in which a student enrolls can affect how the course applies to their plan of study. For example, in a co-taught course between anthropology and engineering technology, enrolling in the ANTH section may allow the course to fulfill a requirement for engineering students. This added complexity is relevant to understanding advisors' experiences, as it requires them to navigate and communicate nuanced enrollment and degree applicability details to ensure students make informed decisions within these cross-college structures.

This study examined academic advising not merely as a support mechanism, but as an enabler for the functioning of CE programs. This research looks to understand what are academic advisor's experiences working with a cross-college co-teaching program? Therefore, this study explored how academic advising operates within this cross-college, co-taught CE program: a minor collaboratively designed and delivered by engineering technology, liberal arts, and business units.

As CE expands, the role of academic advising works to support students with understanding and navigating the complex, transdisciplinary structures. While educational spaces where disciplines converge create distinctive learning opportunities, they also introduce advising complexities, including plan-of-study alignment, scheduling coordination, and navigation across disparate college policies [18]. In response to these challenges, White and Schulenberg [19] conceptualize academic advising as a learning-centered, integrative educational process rather than just an administrative function. The authors position advising as a space where students reflect on their academic choices and partake in decision-making and self-authorship [19]. This perspective is relevant in CE contexts, where students and advisors must make sense of multiple disciplinary expectations and synthesize how and if this type of learning matches the students' interests. Advising supports students in making meaning of their educational experiences and plans-of-study. Therefore, using a qualitative research design and semi-structured interviews, this work-in-progress analysis examines the experiences of academic advisors from engineering technology, liberal arts, and business as they navigate this cross-college, co-taught model for a design and innovation minor degree.

This preliminary study is part of a larger research project that examines the scalability of a cross-college, co-teaching model at a large university. The broader project is guided by Kezar and Gehrke's framework on "Communities of Transformation," which describes how innovative educational practices spread through shared vision, distributed leadership, and boundary-spanning work across institutional structures [20]. Their framework focuses on examining formal mechanisms and lived experiences of individuals who enact and support educational innovation. This perspective informed the focus on academic advisors as essential contributors to institutional change within a convergence-based curriculum. Academic advising represents a key institutional function within the ecosystem of higher education, particularly given the complexity of cross-college curricula, policy alignment, and student pathfinding in transdisciplinary focused programs. The researchers sought to document the experiences of advisors involved and their views on challenges, supporting factors, and obstacles. Gaining a comprehensive understanding is essential in educational studies, which attend to the program's cultural context, participant actions, and the ways individuals make sense of the initiative as it unfolds. Therefore, this study wants to explore:

1. What are academic advisors' experiences working with a CE program featuring cross-college co-teaching?

This question was used to explore the preliminary findings of the advisor data. As this work in progress paper continues, the authors hope to create more nuanced research questions.

Participants

This work-in-progress paper draws on semi-structured interviews with four academic advisors who guide students through the Design and Innovation minor. These advisors represent three different colleges; the Engineering Technology, Liberal Arts, and Business. Two advisors are from the same college but different academic units. This distribution reflects the program's unique cross-college structure. While the minor is administratively housed within Engineering Technology (its required "academic home"), it serves students from various majors across multiple colleges.

The importance of these advisors lies in their multilayered advising roles:

1. **Program Navigation:** They help students understand how the minor fits within their existing degree programs
2. **Cross-College Coordination:** They facilitate registration across different academic units with varying policies and procedures
3. **Curricular Integration:** They assist students in aligning the minor's requirements with their primary degree requirements
4. **Institutional Perspective:** They represent different vantage points on how the minor interacts with various academic cultures

Advisors were purposefully selected because they serve as key navigators for students from academic units where substantial numbers of students pursue the Design and Innovation minor. These advisors had been previously identified through earlier phases of our larger study as central points of contact for students seeking information about program pathways, course sequencing, and degree alignment.

Data Collection

As part of a larger, multi-phase qualitative study that began in Spring 2021, academic advisors were invited via email to participate in individual interviews during the Fall 2022 semester. This data collection phase built directly on earlier rounds of interviews with students, faculty, and administrators involved in the CE initiative. Insights from those stakeholder interviews informed the development of the advisor interview guide, allowing the research team to refine questions related to advising structures, friction points, and areas of uncertainty that had emerged but were not yet understood from an advising perspective.

Semi-structured interviews were conducted with four academic advisors of students enrolled in the design and innovation program. This format provided space for advisors to reflect on their experiences while giving interviewers the flexibility to probe and follow up based on individual advising contexts. Interviews were conducted either in person or virtually, depending on participant preference, and ranged from approximately 30 minutes to over an hour. All interviews were audio-recorded with participants' consent and transcribed verbatim for analysis.

One social science researcher conducted the four interviews. That researcher plus one more social science researcher reviewed and cleaned the transcripts and conducted a preliminary qualitative analysis. Consistent with qualitative research traditions, the researchers served as key instruments in the study [21]; both have been involved in data collection since the early stages of the project and have led or co-authored multiple publications drawing on the full project dataset [7],[8],[9],[18]. Because this paper reports preliminary findings, the analysis focuses solely on the advisor interview subset.

Data Analysis

Interview transcripts were cleaned and imported into NVivo for qualitative analysis. An exploratory, inductive analytic approach was used to identify patterns across the dataset. Data analysis involved building “patterns, categories, and themes from the bottom up by organizing the data into increasingly more abstract units of information” [21]. Both researchers reviewed the transcripts and engaged in initial coding focused on advisors’ experiences supporting students in the Design and Innovation minor. Through iterative discussion the researchers developed a preliminary set of themes that reflected shared and divergent advising experiences.

Given that both researchers have been involved in data collection and analysis across the larger NSF I-USE study, they brought substantial familiarity with the broader dataset and institutional context to this analysis. At the same time, their positionality required ongoing reflexive attention to deepen their understanding of where and how findings were developed. Analytic discussions explicitly surfaced assumptions and interpretations to support analytic rigor. As a work-in-progress analysis, findings represent an initial interpretation of academic advisors’ experiences within a cross-college, co-taught program. Future phases of analysis can incorporate additional interviews, observations of advising interactions, and member checking to further refine and strengthen the credibility of emerging themes.

Preliminary Findings

This section presents findings from interviews with four academic advisors supporting a cross-college, co-taught Design and Innovation minor. The findings draw on participant experiences to illuminate key insights to advising for a cross-college program, with attention to shared and different experiences. The preliminary themes are around: Advisors as Institutional Connectors, Institutional Structures and Systemic Challenges, Informal Knowledge Systems and Relationship-Based Advising Practices, Advising Practices and Ethic of Care, and The Emotional Labor of Cross-College Advising. The analysis revealed how advisors navigate the complexities of CE program administration, with attention to knowledge distribution, institutional structures, and advising practices. These findings represent early analytic insights based on advisor perspectives and will be further developed through future analysis.

Advisors as Institutional Connectors

Advisors emerged as key connectors in cross-college CE, navigating institutional silos to bridge gaps between students, curricula, and administrative systems. Their roles as bridges were shaped by two paradoxes: (1) their deep expertise in plans of study often exceeded that of faculty

or administrators, yet they lacked timely access to programmatic updates, and (2) their position as intermediaries between colleges enabled student success but often placed advisors in a position of navigating competing institutional priorities. As one business advisor noted, *"Sometimes we're the last to know that something is changing or happening, but we're the ones...that understand plans of study better than anybody else."* This disconnect created a structural blind spot: *"If we don't know about it, then we can't help"* students capitalize on cross-disciplinary opportunities.

This lack of standardized information flow led to an uneven distribution of program knowledge. Some advisors with long tenure or prior university experience developed specialized expertise regarding the minor through managing exceptions (e.g., curricular substitutions) or direct consultations with faculty overseeing the minor, which proved incredibly helpful for students. Other advisors, however, relied on students sharing information or institutional *"grapevines"* to acquire this same knowledge. This variability created potential bottlenecks for students' access to the minor, meaning a student's ability to enroll might depend on their advisor's informal networks or the student's own initiative, rather than standardized institutional support. As an advisor from the College of Engineering Technology mentioned, *"I think word of mouth is so big for minors in general, but especially a minor that doesn't have an academic home,"* such as the Design and Innovation minor.

Beyond navigating information gaps, advisors acted as vital guides, connecting the minor's skill-building potential with students' individual career aspirations or passions, while ensuring its practical fit within their academic journeys. When presenting the minor, advisors strategically framed it as a tool for developing transferable skills rather than as a standalone credential. This framing aligned with students' goals, especially for those returning from internships who sought more applied, team-based experiences. Notably, many students arrived at advising appointments already interested in the minor, suggesting the program's appeal extended beyond formal recruitment channels. The advisors' role then focused on practical integration, ensuring the minor fit within existing plans-of-study without derailing graduation timelines.

A key aspect of advisors' connector role involved resolving specific course enrollment issues, positioning themselves between colleges, policies, and faculty. This demanded a deep understanding of institutional knowledge and significant relational labor. Scheduling conflicts, particularly those arising from batch scheduling systems that prioritized major requirements, presented a persistent challenge. Lab-based core courses within the minor were especially vulnerable to conflicts with major requirements, as one engineering technology advisor explained: *"We list [courses] in order of priority. So your major classes are always going to be first... and because these have labs, a lot of times they will conflict."* In these instances, advisors were crucial in helping students understand these conflicts and strategize how to integrate minor courses into their academic plans.

Beyond individual course enrollment, advisors assumed a broader intermediary role, often feeling *"in limbo"* as they navigated complex institutional landscapes to ensure students could enroll in and ultimately complete their minor programs. They served as the primary point

of contact for students when requirements were unclear or when broader enrollment or degree progression problems arose. This role was complicated by the fact that advisors were not always responsible for creating the policies or structures they were attempting to explain. Consequently, advisors regularly reached out to faculty, coordinated across departments, and synthesized disparate information to facilitate students' overall progress toward the minor. They also collaborated with faculty to help students successfully complete their programs. However, despite these extensive efforts to connect students with the necessary resources and information, advisors often confronted systemic limitations. One engineering technology advisor noted that students facing graduation deadlines might abandon their minor when confronted with the choice between graduating on time and extending their studies. Advisors' critical role positioned them to navigate these complex systems with students, underscoring their capacity to bridge the discrepancies between how minor programs are designed and how they ultimately function for students.

Institutional Structures and Systemic Challenges

Cross-college convergence education programs like the Design and Innovation minor expose misalignments between institutional structures and CE initiatives. Advisors identified three systemic challenges that disproportionately burdened both students and advisors in the program: (1) registration systems designed for disciplinary silos, (2) fragmented communication channels, and (3) uneven resource distribution across colleges. While advisors developed informal workarounds to mitigate these barriers, their solutions introduced additional labor, risk, and inequities in student access.

Registration Systems: Prioritizing Majors, Not Minors

Advisors frequently operate within a complex institutional ecosystem where various administrative systems, though intended to be interdependent and mutually supportive, often have competing priorities. This misalignment is particularly evident in the context of minor programs, such as the Design and Innovation minor, which are sometimes deprioritized by administrative offices like the registrar's. As one advisor explained, *"They know that this is an issue. But it isn't always a priority for them because, well, minors aren't required."* This systemic deprioritization creates significant challenges for advisors, who must then bridge these institutional gaps to ensure students can complete minors, especially for those students who this program aligns with their career interests and passions.

This broader institutional logic, which frames minors as optional rather than integral to students' education, directly shapes operational systems. For instance, a significant barrier to cross-college program completion was identified in the way batch scheduling systems disadvantaged the Design and Innovation minor. As one advisor explained:

"We list [classes] in order of priority. So, your major classes are always going to be first and then your minor classes are going to be listed next. And because these [courses] have labs, a lot of times they will conflict. And so, if you're going to get rid of a class and you're getting ready to graduate, your minor class is going to be the one that gets knocked off."

The system's inflexibility was further compounded by automated registration tools, which struggled particularly with classes that had more experimental components, such as labs. One engineering and technology advisor described this challenge: *"A computer's making decisions, which is fine if it has the right data fed into it... And so, it needs to be flexible in some ways, and the university system is not built for that."*

Communication Breakdowns: The "Last to Know" Problem

Advisors' ability to support the minor was consistently undermined by fragmented communication channels. Despite their acknowledged deep expertise in plans of study, advisors were often excluded from timely programmatic updates. Information frequently circulated through sporadic emails or word-of-mouth, creating a disconnect. As one advisor noted, *"Sometimes we're the last to know that something is changing or happening,"* despite being the most well-versed in academic plans. This advisor further expressed a perception that the university does not fully recognize the extent of advisors' knowledge and their crucial contributions to student success. This *"last to know"* dynamic created a structural lag between program changes and advisor knowledge. For example, advisors in the College of Liberal Arts frequently directed students to the College of Engineering Technology for minor-related questions, despite the program being shared across three colleges. The College of Engineering Technology thus emerged as a de facto hub because it housed the minor's academic home.

Consequently, advisors reported often being reactive at times rather than proactive in supporting the program. One culprit was fragmented communication channels and a lack of clear departmental expectations regarding responsibilities for administering the minor, as one engineering and technology advisor emphasized, *"Everyone has to have clear expectations of which departments are doing what."*

Uneven Resource Distribution: The "Simple Click" vs. the "Backburner"

The minor's cross-college nature revealed stark disparities in how different units supported advisors:

- **College of Business:** Advisors described the minor as "a simple click" in their registration system, with clear documentation and faculty support.
- **College of Engineering Technology:** Advisors faced challenges, including outdated catalog descriptions, but reported strong faculty support.
- **College of Liberal Arts:** Advisors reported few enrollment issues but relied heavily on the College of Engineering Technology for guidance.

These differences reflected broader institutional inequities. Advisors in under-resourced or overburdened areas described minors being placed *"on the backburner,"* particularly when managing heavy caseloads, competing priorities, or the labor involved in tracking down critical information. One engineering technology advisor recalled the steep learning curve for new hires: *"You're given 200 students and said, 'Learn as you go, ask questions when you have them'... And so that is one of the things that I think [why] minors are kind of on the backburner for us."*

Advisors noted that sustained coordination was difficult due to time constraints and personnel capacity, with breakdowns rarely attributed to interpersonal conflict. Instead, systemic pressures, such as the lack of dedicated time and resources for cross-college collaboration, were the primary culprits. While the College of Engineering Technology advisor described substantial challenges, advisors from the College of Business and College of Liberal Arts reported relatively smooth processes. One business advisor noted that *"for us, it's a simple click,"* while the liberal arts advisor responded *"No"* when asked if they experience enrollment challenges.

Informal Knowledge Systems and Relationship-Based Advising Practices

Advisors in the cross-college Design and Innovation minor leveraged informal, relational, and experiential knowledge to effectively navigate gaps in official documentation and centralized resources. This crucial knowledge circulated through advisor networks, student conversations, and the institutional *"grapevine,"* creating a parallel system of support that compensated for structural limitations. As one advisor framed it, the core of the student-advisor relationship was *"trying to figure out what aligns best with the students' goals."* This deep investment in student success drove advisors' work, even as they skillfully managed the labor-intensive nature of cross-college program navigation.

The Additional Labor of Informal Systems

While essential, the reliance on informal knowledge systems inherently involved additional labor for advisors. They actively engaged in *"keeping track of numerous conversations with students, faculty, and other advisors,"* meticulously building individualized plans for each student. The absence of structured communication, such as the suggestion that *"having someone who can meet with us or talk with us or reach out to us via email even once a year would really be helpful,"* meant advisors proactively synthesized information from different sources. However, the attentiveness of the program coordinator in the College of Engineering Technology and one of the teaching faculty to advisors' questions provided crucial, albeit ad hoc, support. This informal assistance helped mitigate some challenges particularly those in colleges further from the de facto hub, remained susceptible to some information gaps.

Patterns of Informal Knowledge Sharing

The informal knowledge system manifested in several key ways. Advisors adeptly combined official resources with their informal networks to both gather and disseminate information about the minor. As one business advisor explained, this often involved a hybrid approach: *"I'll send [students]... the link for the minor page... some of our students are really good researchers on their own and so they'll look through the catalog or the minor list, and honestly, [others will find it by] word of mouth."* Advisors then integrated this student-shared information into their own knowledge base to be able to share it with others. This hybrid approach, where students also contributed to the information flow, reflected the uneven distribution of program knowledge across colleges. Advisors thus became central figures for collecting and sharing this evolving understanding.

Given the minor's lack of a formal academic home, many advisors outside of the College of Technology and Engineering expressed a desire for more program information. This left some advisors actively seeking more effective strategies to connect students with the minor. For example, a business advisor recalled learning about a student's minor addition only after attending a meeting with someone from the College of Engineering Technology, stating, *"I had a student who added the minor and I did not know very much about it."* Similarly, a liberal arts advisor noted, *"I have directed some students to [the College of Engineering Technology], for any questions they may have around curricula that come up, or especially if it's so outside of [my unit]."* These instances highlight how advisors proactively sought information and directed students, underscoring the critical role of informal communication in the absence of standardized cross-college channels.

Advising Practices and Ethic of Care

In cross-college convergence programs like the Design and Innovation minor, advisors operated as critical bridges between institutional silos and student aspirations. Their work extended beyond bureaucratic navigation to embody an ethic of care that shaped how students experienced the minor. This ethic manifested in three key practices: (1) personalized problem-solving, (2) advocacy within institutional constraints, and (3) emotional labor of cross-college advising. These practices reflected advisors' dual role as both institutional stewards and student advocates, a tension that defined their work in cross-college programs.

Personalized Problem-Solving: "Every Student's a Different Puzzle"

Advisors approached each student as a unique case requiring tailored solutions, particularly in the context of cross-college programs where standardized processes often failed. As an engineering and technology advisor explained, *"what the things I really like about this is every student's a different puzzle with a different picture that they're trying to make at the end."* This metaphor captured the complexity of advising in general but specifically in convergence education, where students' goals, disciplinary backgrounds, and institutional constraints intersected in unpredictable ways.

This personalized approach required advisors to translate institutional requirements into actionable steps for students with diverse academic backgrounds. Anticipate cross-college conflicts (e.g., scheduling, prerequisite mismatches) before they derailed students' plans. Develop contingency plans for students facing barriers to minor completion.

Advocacy Within Institutional Constraints

Advisors positioned themselves as student advocates while operating within the constraints of institutional systems. This dual role required them to: Mediate between students and faculty when conflicts arose (e.g., enrollment denials, prerequisite disputes). Negotiate exceptions to policies that disproportionately affected cross-college students. Shield students from bureaucratic friction by preemptively identifying and resolving issues.

One advisor highlighted the trust students placed in them, noting that *"advisors sometimes are the only emails a student will open."* This observation underscored the unique

influence advisors wielded in promoting cross-college programs. Their advocacy extended to program promotion, with advisors proactively encouraging students to consider the minor based on their interests. As one business advisor noted, *"we encourage them from that early start to start thinking about what minor what potential concentration, what are your interests, so the students will say to me, they have an interest in design and innovation or entrepreneurship. So I would give them this as an option."* However, this advocacy was constrained by institutional silos and the deprioritization of minors. Advisors described feeling between competing priorities trying to balance student needs with policy compliance, faculty expectations, and administrative limitations.

The Emotional Labor of Cross-College Advising

The ethic of care that defined advisors' work came with emotional labor, particularly in cross-college contexts. Advisors described: managing student anxieties about navigating unfamiliar disciplinary terrain; absorbing institutional frustrations when systemic barriers threatened students' progress; celebrating *"small wins"* (e.g., securing a seat in a course, resolving a scheduling conflict) to maintain morale. One advisor captured this labor in their description of *"figuring it out"* while supporting students with diverse needs. This emotional work was compounded by the lack of institutional support for cross-college programs, leaving advisors to shoulder the burden of logistical and emotional challenges.

Despite these challenges, advisors articulated a strong sense of institutional stewardship. They positioned themselves as liaisons and advocates, underscoring that their primary responsibility was to students rather than to faculty or administrative systems. As one engineering and technology advisor emphasized:

"Talking with advisors who are on campus is a good idea... keeping the advisors in the loop of what is going on. What classes are coming up questions where students go... I think the influence of the advisor is really a strong tool. And you just have to engage with the advisor community in a way that's productive and gets them excited about it too. So they know how to talk about it."

This quote highlighted the dual role of advisors as institutional connectors and student champions. While each advisor's role looks different depending on the college they are working with, one sentiment remains true, they are connecting students to opportunities for their journey in higher education.

At this institution you need to meet with your advisor in order to enroll in your courses, therefore, the advisors are key in the student experience. As an business advisor from experienced *"If I email my students, chances are they're going to read my message, rather than if it just came from a Purdue account or some random person they don't know."* In addition to enrolling in classes, the advisors described working with the students and getting to know them beyond just making sure the students are enrolled in classes. When we think about the relationship between an advisor and a student can impact the sustainment of a cross-college program, it can be interesting to see how the students understand their role in this as well.

Discussion

This study offers a preliminary examination of academic advisors' experiences within a cross-college, co-taught CE program. The preliminary findings suggest that CE, when enacted through a cross-college co-teaching model, changes what advising responsibilities look and function like, due to advising systems remaining organized around disciplinary and college-based boundaries [2]. While these findings should not be interpreted as representative of all CE initiatives, they offer insight into how advising commitment and labor is shaped by one approach to CE and highlight institutional dynamics that may be relevant to similar cross-college programs.

Convergence Education Introduces New Advising Demands

Prior scholarship positions academic advisors as key institutional actors who help students navigate complex curricular structures, align educational goals with institutional resources, and support persistence and engagement [14],[16]. Advisors explained that they help align students' interests with opportunities such as the minor, and work to enroll them in available spaces that fit within their existing plan of study. Yet, how the process looks for advisors enrolling students in the minor looks different across colleges. Advisors from different academic disciplines described varying levels of success and difficulty in the enrollment process, noting that although each college has an equal role in the minor, differences in systems and college-specific factors lead to variations in the advising experience across colleges. Some advisors described enrollment as a straightforward process requiring only a few clicks, with no notable issues, whereas others reported challenges in integrating the required courses into a student's existing plan of study. This variation suggests that structural differences in degree requirements and scheduling constraints across programs may shape the accessibility and ease of participation in the minor. Therefore, how the advisor perceives and navigates the systems can change the access to and enrollment in the minor.

Drawing on the findings of advisors translating degree requirements, navigating batch scheduling systems, and coordinating across multiple colleges, all this illustrates how CE introduces advising demands that extend beyond traditional degree planning. In this case, co-taught, cross-college courses required advisors to maintain broad institutional knowledge, much of which was acquired informally through relationships with faculty, other advisors, and students. Advisors described learning program requirements through trial-and-error and repeated interactions rather than through centralized or formalized advising resources. These demands were further shaped by broader enrollment pressures and high advising caseloads. As advising ratios increase, reliance on tacit knowledge and personal networks becomes more difficult to sustain [16],[17]. While advisors often identified effective workarounds, the findings suggest that such strategies depend heavily on individual expertise and relational labor rather than institutional design.

Advisors enter these roles and must continuously keep up with evolving information about available opportunities for students, often without consistent institutional support or clear communication channels. This ongoing need to independently gather, interpret, and disseminate information reinforces the reliance on informal knowledge systems. These preliminary findings

show the importance of developing a centralized and sustainable advising structure to support cross-college initiatives.

Advisors as Central, but Underrecognized, Actors in Convergence Education

In order to sustain cross-college co-taught classes within the minor, advisors work to make these opportunities available and known for students. In doing so, they act as key drivers of the minor's continuation and growth. The more knowledgeable advisors are of this minor and its classes, the more the advisors can advocate for the classes to their students. In this way advisors are translating institutional complexity into actionable pathways for students.

Furthermore, advisors take the role of being the mediators between students and faculty. They facilitate communication by interpreting program expectations as set by faculty, relaying student needs and constraints, and helping align academic opportunities with individual student goals. This coordinating work aligns with prior research on advising roles while reinforcing concerns about the limited recognition of advising labor within program planning and evaluation [11]. This positions advisors as operating "in between" students, faculty, and administrative systems.

The data revealed a mismatch between the expectations associated with advising roles and the level of monetary compensation provided. Additionally, high advisor turnover at this institution like many contributes to inconsistencies in advising knowledge. This issue matters greatly overall, and particularly for programs and minors that are often learned informally through on-the-job experience and word-of-mouth. When compensation does not align with the scope and complexity of advising responsibilities, institutions may face difficulty retaining experienced advisors, resulting in frequent turnover and a loss of continuity. Consequently, program knowledge remains decentralized and unevenly distributed, relying on informal networks rather than standardized systems. This reality places additional responsibility on individual advisors to acquire and maintain knowledge while limiting students' access to information about available opportunities that might connect to the students' interests. This positioning points to a structural tension observed in this case: pedagogical innovation through co-teaching and transdisciplinary curricula advanced more rapidly than the advising and administrative systems designed to support them [9]. The need for better alignment between compensation, expectations, and institutional support structures for advisors can reshape how minors are sustained through advisor retention.

Implications for Practice and Design

This study draws on advisor perspectives to inform ongoing efforts to support CE through the Design and Innovation program. Given the preliminary nature of these findings, the current analysis focuses on advisor interview transcripts, providing an initial examination of one component within the broader institutional ecosystem supporting CE. This analytic focus offers an early lens into the advising dynamics within a cross-college, co-teaching model, acknowledging that advising functions within a larger system of institutional coordination. Prior work has explored other stakeholders' experiences within the cross-college program, which has informed the researchers' understanding of the dynamics and phenomena shaping collaboration and support structures in this model.

These preliminary findings point to practical considerations for designing and sustaining cross-college, co-taught CE programs. Advisors' experiences suggest that earlier involvement of advising professionals in program design, clearer knowledge-sharing mechanisms, and greater alignment between curricular innovation and administrative systems may help reduce barriers for students and advisors [6]. Establishing centralized advising resources, standardized communication channels, and cross-college coordination structures, improvements can be made in terms of consistency in how program information is shared and implemented. Recognizing and supporting the expanded scope of advising labor through manageable caseloads and professional development opportunities can strengthen advisors' facilitation of students' academic journeys. Designing institutional infrastructures that can support CE curricula and the advising systems necessary to make such programs sustainable are drivers to institutional change.

Advisors in this study demonstrated a proactive approach, intentionally seeking out information about the minor and working to connect their students with these opportunities rather than relying solely on standard advising structures. This willingness to go beyond routine responsibilities stemmed from individual initiative to expand students' access to this transdisciplinary program. However, this reveals a potential inconsistency in student experiences, as access to these opportunities may depend on an advisor's individual initiative to seek out information about new minor plans of study. Therefore, relying on individual effort alone may create uneven access, underscoring the critical need for institutional systems that sustain awareness of opportunities such as the Design & Innovation minor.

Future research can talk to the advisors and other administrative personnel at each college to understand the mechanisms that contribute to differences in the process of student enrollment. The advisors interviewed for this study consisted of advisors within the colleges involved in developing the program; expanding this work to include advisors from outside these units may provide insight into how other advisors navigate institutional systems to learn about and support student participation in the minor. Coupled with the need to understand advisors' perspectives, the students who find the minor without support from the advisor can allow for an understanding of the pathways in which students navigate their educational journeys in higher education. Students who enroll in these courses can allow researchers to understand how information about co-taught courses spreads through informal student networks, as well as the students experience in this style of courses. Understanding students' experiences is therefore important for the promotion and long-term sustainability of such programs, as without student engagement, the classes could not continue. These areas for future research can offer a grounded understanding of how institutional structures and individual initiative shape the ways students and advisors engage with cross-college programs.

Conclusion

While cross-college, co-taught CE programs benefit students, the day-to-day work of making those opportunities accessible typically is on advisors navigating various systems.

Advisors had varying levels of institutional support, communication, and workload, and much of their work relies on individual effort, informal knowledge, and personal networks rather than institutional structures. Sustaining CE programs, such as these, is more than curricular design, it is also about how institutions support the advisors with guiding students. Therefore, creating consistent structures for communication and advising support will be important for ensuring that these opportunities are not only available to all students. Advisors are an important link between institutional intentions and students lived experiences in higher education, without continuing to improve the structures and support systems that guide their work, even well-designed programs may fail to serve the students they are intended to support. Future work will build on this preliminary analysis to further examine how advisors work within institutions as key drivers of CE initiatives.

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