

Evaluating a Tandem Advising Model at a STEM Institution: A Qualitative Study of Student and Advisor Experiences

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Abstract

This theory/methods full paper advances a qualitative study framework for examining how a tandem advising model is experienced by both students and advisors at a STEM-focused institutions. Academic advising is often positioned as a key mechanism for creating a connection for students to the institution, yet much of the existing literature relies on outcome-focused measures that offer limited insight into how advising models are enacted and experienced, particularly as a tandem advising model. As advising structures increasingly combine faculty-based and professional advising roles, there is a need for methodological approaches that can examine how these advising models are working and how they impact student and advisor experiences at their institution.

This paper introduces a qualitative study design for evaluating the shared experiences of a tandem advising model. The tandem advising model was implemented at a small, STEM-focused university. In this model, first-year students are supported by both a professional advisor, who emphasizes holistic development and early intervention, and a faculty advisor, who provides discipline-specific mentoring. After the first year, students transition to a faculty-only advising structure. Qualitative studies compare the experiences of students who persist into their second academic year with those who depart after their first year. Data collection included semi-structured interviews with faculty and professional advisors, focus groups with persisting and non-persisting students. Data analysis employs reflexive thematic analysis, with iterative coding and team-based interpretation supporting analytic rigor.

Initial findings suggest that the effectiveness of the advising program is shaped by relational density, role alignment, and transitions in advising support. Persisting students tend to experience the program as coherent and reinforcing, while non-persisters more often describe it as fragmented or unclear, particularly during the transition to faculty-only advising. From a program evaluation perspective, this study offers a transferable framework for examining advising structures and stakeholder experiences, providing engineering education researchers with tools to better understand and improve how institutional practices support student success.

Keywords:

tandem advising model, advising experiences, persistence, qualitative methods

Introduction

This theory/methods full paper advances a qualitative study approach for a program evaluation of a tandem advising model at a small STEM university. The Context-Input-Process-Product model developed by Stufflebeam was used to drive this research. Students' supportive and positive experiences are important for understanding student engagement, persistence, and success in higher education [1], [2], [17], [23]. Students who feel recognized, supported, and connected are more likely to persist and to interpret academic challenges as part of a developmental process rather than as signals of misfit [5], [6]. When connection is absent,

students may disengage or leave even when academically capable. These dynamics are especially salient in STEM contexts, where early rigor and disciplinary norms can intensify questions of fit and legitimacy [3], [4].

Academic advising plays a prominent role in shaping how students navigate these environments. Advising relationships help students interpret expectations, understand curricular pathways, and make sense of their standing within the institution [7], [8]. For many students, particularly during the first year, advisors are among the most consistent institutional agents they encounter. Despite this prominence, advising remains under-theorized and under-methodologized within engineering education research. Much of the existing literature emphasizes satisfaction or retention outcomes, offering limited insight into how advising is enacted in practice and how students interpret advising interactions as affirmations or negations of connection. [9], [10].

This limitation is increasingly consequential as advising structures become more complex. Many institutions now rely on combinations of faculty advisors and professional advisors, each shaped by distinct training, professional norms, and institutional positioning [11], [12], [13]. Faculty advisors often emphasize disciplinary identity and academic standards, while professional advisors typically focus on holistic support and early intervention [12], [15]. Although these roles are often intended to be complementary, students may experience advising as fragmented or inconsistent when expectations are unclear or communication across roles is uneven [14], [20].

Understanding how advising structures shape students' experiences requires methodological approaches that foreground relationships, context, and meaning making. Student experiences that include meaningful connection are not a static outcome that can be fully captured through appointment counts or satisfaction ratings; rather, it is co-constructed through repeated interactions in which students interpret institutional messages about care, expectations, and legitimacy [10], [17].

In response, this paper presents a qualitative study to examine student and advisor experiences of their advising program with a tandem advising model at a small, STEM-focused university. By comparing the experiences of students who persist and those who depart after the first year, the study investigates how advising structures are enacted and interpreted in practice. Focusing on evaluating program effectiveness using the CIPP model, analysis examines the broader conditions in which the tandem advising model operated, the resources that supports it, and the processes through which services were delivered.

Program Evaluation Framework

Program evaluation provided a structured way to examine how programs were designed, implemented, and experienced in practice, as well as whether they achieved their intended outcomes. Rather than focusing only on outcomes, program evaluation frameworks encouraged researchers to examine the broader conditions in which programs operated, the resources that supported them, and the processes through which services were delivered. One widely used framework for evaluating educational programs was the Context–Input–Process–Product (CIPP) model developed by Stufflebeam [23]. The CIPP model was designed to support decision making and program improvement by evaluating programs across four dimensions: the needs and environment in which the program operated (context), the strategies and resources used to design

the program (input), how the program was implemented in practice (process), and the outcomes that resulted from the program (product).

A central premise of the CIPP model was that program effectiveness was shaped not only by outcomes but also by how programs were structured and implemented within their institutional environments. Stufflebeam [23] emphasized that evaluations should consider the broader context in which programs operated, including institutional needs, stakeholder expectations, and environmental conditions that influenced program design. Input evaluation examined the strategies, structures, and resources used to support program implementation, while process evaluation focused on how the program operated in practice and how participants experienced program activities. Product evaluation considered the outcomes and impacts of the program, including both intended and unintended results.

Program evaluation frameworks such as CIPP were particularly useful in educational settings where programs involved multiple stakeholders and complex organizational structures. In higher education advising programs, evaluation provided insight into how advising structures were organized, how advisors carried out their responsibilities, and how students experienced advising interactions. By examining the context in which advising occurred, the design of advising systems, the processes through which advising was delivered, and the outcomes that resulted from those interactions, program evaluation offered a comprehensive framework for understanding how advising models functioned within institutional environments.

In this study, the CIPP framework provided a structure for examining how a tandem advising model operated within a specialized STEM institution and identified opportunities for improvement. Context evaluation considered the institutional advising environment and the needs of both students and advisors. Input evaluation examined the design of the tandem advising model, including the roles of faculty and professional advisors and the resources available to support advising. Process evaluation explored how advising interactions occurred in practice and how both advisors and students experienced the tandem advising structure. Product evaluation considered the outcomes associated with the advising model, including students' experiences and perceptions of advising support. Together, these four dimensions provided a framework for understanding how the tandem advising model functioned and where improvements could strengthen advising experiences for both students and advisors.

Review of Relevant Literature

This study is informed by scholarship on students' experiences in higher education, research on academic advising models, and work linking advising to persistence. Together, this literature establishes advising as a meaningful relational site for students' experiences while also highlighting limitations in how advising has typically been studied.

Connection to the institution including a sense of belonging is consistently associated with student engagement, persistence, and academic success in higher education [1], [2], [10]. Students who experience belonging are more likely to persist through academic challenges, while those who feel marginalized or unsupported are more likely to disengage even when academically capable [5], [6]. These dynamics are especially pronounced in STEM contexts, where early rigor and disciplinary norms can intensify questions of fit and legitimacy [3], [4].

Academic advising represents a key institutional context through which student connection to the institution is shaped. Advising relationships help students interpret expectations, navigate curricular pathways, and understand their standing within the institution [7], [8]. Prior research distinguishes between faculty-based and professional advising models, each offering distinct strengths and challenges [12], [13], [15]. Faculty advisors often emphasize disciplinary identity and academic standards, while professional advisors typically focus on holistic support and early intervention. When students interact with both roles, differences in expectations and communication can shape their advising experiences by allowing students to have a more holistic experience [9], [14].

A growing body of work links supportive advising relationships to students' ability to connect to their institution and persistence [5], [7]. However, much of this research relies on satisfaction or outcome-based measures, offering limited insight into how advising is enacted and interpreted within institutional contexts [17], [18]. Scholars have called for qualitative approaches that attend to advising as a relational and cultural practice rather than a uniform intervention [21].

This study responds to these calls by foregrounding advising experiences from students' and advisors' as the unit of analysis and using a qualitative study design to examine how advising structures and role alignment shape students' and advisors' experiences within a shared institutional context.

Research Design and Methodological Contribution

The purpose of this study is to evaluate students' and advisors' experiences in relation to the advising structure at a small STEM focused institution. To do so, the study employs a qualitative study design that foregrounds institutional context, relational dynamics, and participant meaning-making. This design supports examination of advising as a culturally situated practice enacted through everyday interactions rather than as a discrete program or service.

Qualitative research was well-suited for exploring complex social phenomena from the perspectives of those experiencing them [19], [21]. Advising practices are shaped by organizational structures, professional norms, and local interpretations of student success, making them difficult to capture through decontextualized measures alone. The qualitative research design allows for examination of variation within a shared institutional environment while maintaining analytic attention to context.

The program examined in this study is the tandem advising model at a small, STEM-focused university. Within this evaluation, two groups are considered: students who persist into their second academic year and those who depart after their first year. Rather than treating persistence as an outcome to be predicted, it is used as an analytic lens to understand how the advising program is experienced across different student trajectories.

The approach is central to the evaluation. By examining persisters and non-persisters within the same advising program, the study identifies key factors such as role alignment, relational continuity, and advising transitions that influence the program's effectiveness. This approach responds to calls in engineering education research to move beyond deficit-oriented explanations

of attrition and instead focus on how institutional practices can be improved to better support student success [17], [18].

The study is guided by the following research questions, which focus on students' and advisors' experiences with a tandem advising model:

1. How is the tandem advising model perceived at a small, STEM-focused 4-year institution?
2. How is the tandem advising model perceived by students?
3. How is the tandem advising model perceived by advisors?

Together, these questions foreground advising as a relational and interpretive practice and align with the study's qualitative design. They enable examination of alignment and divergence across advising roles, as well as comparison between advisor and student experiences within a shared institutional context.

Interpretive qualitative methods guide data collection and analysis. From a constructivist perspective, the advising program is understood as shaped through interactions among students, faculty advisors, and professional advisors. This stance informs methodological decisions throughout the evaluation and supports reflexive engagement with participants' experiences. By articulating and applying this approach, the study offers a structured yet flexible framework for evaluating advising programs and identifying opportunities for improvement.

Research Context and Tandem Advising Model

The study is situated at a small, STEM-focused university in the United States that serves a predominantly undergraduate population. As is common in STEM-focused institutions, students encounter early immersion in technically rigorous coursework alongside strong disciplinary norms around performance and independence. These conditions make the first year a particularly salient period for examining advising and student experiences.

At the time of the study, the institution employed a tandem advising model for first-year students. Under this structure, each student was assigned both a professional advisor and a faculty advisor. Professional advisors emphasized holistic student development, early identification of academic or personal challenges, and navigation of institutional policies and resources. Faculty advisors focused on discipline-specific guidance, including curriculum planning, academic expectations within the major, and professional pathways [7], [8], [12].

The tandem advising model was intended to provide complementary forms of support during students' transition to college. Professional advisors often served as a consistent point of contact, while faculty advisors introduced students to disciplinary norms and expectations. Although advising responsibilities were outlined at the institutional level, advisors retained discretion in how they enacted their roles, and coordination between faculty and professional advisors varied across individuals and departments [14], [15].

After the first academic year, students transitioned to a faculty-only advising structure. Professional advisors were no longer assigned, and students were expected to rely primarily on faculty advisors for ongoing academic guidance. This transition represented a meaningful change

in advising relationships, particularly for students who had relied heavily on professional advisors during their first year.

The tandem advising model, coupled with the subsequent transition to faculty-only advising, provides a bounded context for examining the advising model and student experiences. By evaluating the effectiveness of the advising structure, this study treats the model as an institutional setting within which advising roles, relationships, and expectations are interpreted and negotiated by advisors and students.

Data Collection Methods

Data collection for this study was designed to capture the experiences of advisors and students in relation to the tandem advising model. Consistent with qualitative study methodology, data are gathered from participants occupying different roles within the advising system to enable comparison between intended advising practices and students' lived experiences [21], [22]. Three participant groups are included: faculty advisors, professional advisors, and undergraduate students.

Participants are recruited using purposeful sampling to ensure representation across advising roles and student persistence trajectories [21]. Faculty and professional advisors invited to participate include individuals who have served within the tandem advising model and who advise first-year STEM students. Advisors are selected based on their involvement in the advising structure rather than on measures of effectiveness.

Student participants are drawn from two populations. The first includes students who experienced the tandem advising model during their first year and persisted into their second academic year. The second includes students who participated in the tandem advising model but departed the institution prior to their second year.

Data collection includes semi-structured interviews with faculty and professional advisors, as well as focus groups with students. Advisor interviews elicit participants' interpretations of their advising roles, priorities, and approaches to student support [12], [15]. Student focus groups with persisting and non-persisting students support collective reflection on shared advising experiences [19].

Data collection is iterative, with insights from earlier interviews informing subsequent protocols and lines of inquiry. Focus groups were conducted until thematic saturation is approached within each participant group. This approach supports examination of this advising model structure as it is enacted and experienced across roles while remaining responsive to emerging analytic insights.

Data Analysis and Trustworthiness

Data analysis is conducted using reflexive thematic analysis, an approach well suited for identifying patterns of meaning across qualitative data while remaining compatible with ongoing data collection [18]. Within this program evaluation, reflexive thematic analysis is used to examine how the tandem advising model is experienced by both students and advisors, with a focus on identifying strengths, gaps, and opportunities for improvement. This analytic approach

remains aligned with the study's constructivist stance, recognizing that perceptions of advising practices, processes, and outcomes are co-constructed through participant experiences and researcher interpretation.

Theme development focuses on identifying patterned meanings related to experiences related to the advising model. Attention is given to points of convergence and divergence across faculty advisors, professional advisors, and students, as well as differences between persisters and non-persisters. Earlier transcripts are revisited as themes are refined, supporting analytic coherence across the dataset.

Several strategies support trustworthiness [22]. Triangulation across participant groups enables comparison between intended advising practices and lived experiences. Peer debriefing within the research team provides opportunities to challenge interpretations and consider alternative explanations. An audit trail is maintained, including interview protocols, coding iterations, and analytic memos.

Reflexivity is treated as an ongoing analytic practice rather than a discrete step. The research team documents positionalities and evolving interpretations throughout analysis, attending to how assumptions shape meaning-making. Together, these practices enhance transparency and support the credibility of the initial findings presented in the following section.

Findings

This study examined how advising was enacted and experienced within a tandem advising model that formally combined faculty and professional roles. Across stakeholder groups, advising did not function as a consistently coordinated system. While participants consistently expressed positive intent and willingness to support students, shared understanding of expectations, training, and role boundaries varied across individuals and departments.

Advising Preparedness and Expectations

Across interviews, advising preparedness and expectations emerged not as isolated concerns, but as structural conditions shaping how advising was experienced. Both faculty and professional advisors described willingness and commitment to supporting students; however, inconsistent training, unclear scope, and limited shared onboarding contributed to variability in advising practice. Faculty frequently relied on informal learning and peer exchange to interpret institutional expectations, while professional advisors perceived missed opportunities for alignment and skill-building across roles. Student accounts illustrated how this variability translated into uneven advising experiences with persisting students often tolerating advising that met functional needs and non-persisting students being more likely to disengage when communication and support pathways felt unclear or inaccessible.

Informal Advising Relationships

Across stakeholder groups, informal advising relationships functioned as a parallel relational system operating alongside formal advising assignments. Students frequently located guidance through accessibility, familiarity, and trust rather than only through assigned roles. While these informal pathways often generated meaningful connection and support, they also contributed to

uneven advising distribution and variability in student experience. As a result, advising experiences were shaped not only by formal structure but by informal relational access points that operated inconsistently across students. Connections to the institution emerged through these relational anchors when students were able to identify and rely on them, but such access was not uniformly available. Rather than operating as an integrated structure, advising was experienced as a set of loosely connected practices shaped by individual preparation, informal relational access, and uneven awareness of the tandem framework.

Tandem Advising Confusion/Role Clarity

The tandem advising model was widely perceived as conceptually beneficial yet inconsistently enacted. Faculty and professional advisors described collaborative advising as positive in theory, but uncertainty regarding terminology, responsibilities, and communication practices limited consistent integration across roles. Students frequently did not differentiate between advising roles and often relied on a single advisor, typically a faculty member, rather than engaging the tandem structure as a coordinated system. These findings indicate that the presence of multiple advising roles did not automatically translate into expanded or visible support; instead, the effectiveness of the tandem model depended on clarity of role definition, shared expectations, and program visibility within the student experience.

Methodological Implications for Engineering Education Research

This study demonstrates the value of evaluating advising as a program shaped by relational practice and institutional context rather than as a discrete service or intervention. From a program evaluation perspective, this approach provides a more comprehensive understanding of how the tandem advising model is designed, implemented, and experienced within its institutional context. By examining how advising structures are enacted and interpreted by both students and advisors, the evaluation generates insights that extend beyond traditional satisfaction or retention metrics, highlighting areas for improvement and opportunities to strengthen the overall effectiveness of the advising program. Using persisters and non-persisters as cases positions persistence as an analytic lens rather than an outcome to be predicted. This comparative logic foregrounds institutional mechanisms such as role alignment, relational continuity, and advising transitions under shared structural conditions, supporting analyses that move beyond individual deficit explanations [17], [18].

Including faculty advisors, professional advisors, and students as participants strengthens analytic depth by enabling comparison between intended advising practices and lived experiences. This triangulation highlights how advising experiences are negotiated across roles and how students interpret advising interactions as signals of support, legitimacy, or disconnection [7], [12].

Reflexive thematic analysis supports this approach by allowing iterative interpretation while data collection remains ongoing. Rather than fixing themes prematurely, the analytic process remains responsive to emerging patterns, which is important for capturing how the tandem advising model is experienced across different participants and contexts. [18], [22].

For engineering education researchers, this framework offers a transferable method for studying advising, mentoring, and related relational practices as experienced by students and advisors. It complements outcome-focused research by making visible institutional processes that shape experiences that relate to connection to the institution and persistence but are difficult to capture through quantitative measures alone.

Practical Implications and Future Work

Although this study is designed to evaluate the effectiveness of a specific advising model, the initial findings point to several practical considerations for STEM institutions employing tandem advising structures. In particular, the findings suggest that the benefits of tandem advising depend less on the number of assigned advisors and more on coherence across advising roles.

When faculty and professional advisors share clear expectations and communicate informally, students are more likely to experience advising as coordinated and supportive rather than fragmented [7], [12], [15].

Advising transitions also emerge as consequential moments for students' academic experiences. The shift from tandem advising to faculty-only advising may be interpreted as a developmental progression or as a loss of institutional support, depending on the continuity of advising relationships established earlier. Institutions may consider making these transitions more explicit through intentional handoffs, overlapping advising interactions, or clear communication about changes in support structures [6], [10].

Future work will extend data collection to deepen analysis of the themes presented here and to explore variation across disciplines and student backgrounds. As analysis continues, attention will be given to how advising program practices intersect with students' prior experiences and evolving identities, and how these intersections shape experiences over time [1], [20].

Methodologically, future studies may apply this program evaluation framework longitudinally or across institutions to examine how advising programs differ under varying structural conditions [21].

Conclusion

This theory/methods full paper advances a qualitative study framework for examining how a tandem advising model is experienced in a small STEM-focused institution. By framing advising as a program influenced by relational practices and institutional context, this evaluation responds to calls in engineering education research for approaches that better illuminate the processes influencing student persistence and engagement. [17], [18].

The initial findings illustrate how advising experiences operate through relational density, role alignment, and transitions in support, shaping how students interpret institutional care and legitimacy. The qualitative design, which examines professional advisors, faculty advisors, persisters, and non-persisters within a shared advising structure, demonstrates how similar institutional arrangements can be experienced differently depending on how advising roles are enacted and coordinated [1], [10].

This study contributes to advising scholarship by demonstrating that the effectiveness of tandem advising structures depends less on the presence of multiple advisors and more on clarity of preparation, visibility of support pathways, and coordination across roles. While the tandem model expanded potential access points, those access points operated unevenly when expectations and communication were not shared. By examining persisters and non-persisters within a shared advising environment, the study highlights how advising experiences help shape the connection to the institution and academic success through relational clarity and navigational accessibility rather than structural multiplicity alone. The framework presented here offers engineering education researchers a transferable approach for studying advising, mentoring, and related relational practices as culturally situated systems. By foregrounding context, meaning-making, and comparison, the approach complements outcome-focused research and supports process-oriented analyses that are difficult to capture through surveys or retention metrics alone [7], [21].

As data collection and analysis continue, future work will further refine understanding of how advising programs evolve and how they intersect with students' identities and educational trajectories. More broadly, this study underscores the value of methodological approaches that attend to everyday institutional practices and their role in shaping advising experiences in engineering education.

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